CLINICAL ALLERGY

A MONOGRAPH ON THE MANAGEMENT
and
TREATMENT OF ALLERGIC DISEASES

For General Practitioners and Students of Allergy

By

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Dedicated
to the Memory of
DR. AARON BROWN
A Pioneer in Allergy

CONTENT

PREFACE

This monograph was written at the request of my son Julian A. Sterling, M.D.* and of my associates and colleagues. It was their suggestion to record the results of our clinical research and practical experience in the field of allergy obtained at the various clinics, established by the author from the early pioneer days of allergy in Philadelphia:

Jefferson Hospital
Temple Medical College
Temple University Hospital
Skin and Cancer Hospital
Northern Liberties Hospital

We have purposely avoided discussion of immunology, anaphylaxis, and allergy, and details of theory available in many excellent texts. These basic principles are familiar to every medical student. But while in his internship he may treat an occasional asthmatic patient on his rotating medical service and several in accident ward on an emergency basis, when entering the practice of medicine, he is frequently unprepared to cope with details of diagnosis and treatment of allergic diseases.

It is our aim in this monograph to acquaint the general practitioner and interested specialists with the clinical allergic problems and guide them in the proper diagnosis and the successful care of these patients.

April, 1946
Philadelphia, Pa.

*Major, M.C., U.S.A.

INTRODUCTION

I. The Origin and Discard of Drugs
II. The Four R's in Therapeutics for Allergic Individuals
III. The Importance of Obtaining Reliable Instructions

In 1917, I organized the first allergy clinic in a large Philadelphia hospital. Shortly afterward, I was called to the class to demonstrate a patient, who gave a positive reaction (plus 4) to horse dander, which was followed fifteen minutes later by a constitutional reaction. The lecturer was analyzing the various phases and etiologic factors responsible in bronchial asthma. "From now on", he emphasized, "all diseased conditions due to spasms, such as broncho-spasm, uterine spasm and genito-urinary spasm will not be a problem to the medical profession. Recently, a pharmacologist discovered a drug that has a great influence on cellular structures when they are in a state of spasm. He has demonstrated to me from time to time, when various tissue structures were placed in a state of spasm—and when a few drops of this anti-spasmodic were placed on it, the spasm stopped immediately. This drug is benzyl-benzoate".

It was accepted with enthusiasm as a cure in bronchial asthma, whooping cough and various other spasmodic conditions. (2) (3)*

It has been used in various forms—20 per cent alcohol solutions; 20 per cent in oil and 5 to 10 m. m. globules of pure benzyl-benzoate Evidently this drug has not lived up to therapeutic expectations, for in a couple of years, it was discarded by the medical profession. The history of the birth of benzyl-benzoate, and its disappearance from medical practice, has been the fate of many drugs and systems in the diagnosis and treatment of bronchial asthma and allied diseases.

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*Numbers in brackets refer to the bibliography, p. 187.

I. THE ORIGIN AND DISCARD OF DRUGS

Many more of the apparently convincing animal and laboratory experimentations do not live up to clinical expectations. It takes years for the general practitioner to use these methods and drugs before the results prove a disappointment. One only has to recall the following:

1. Treatment of Asthma by Radiation (4)
2. The Use of Calcium in Asthma (5) (6)
3. The Leucopenic Index of Various American Investigators (7) (7-A) (8)
4. Urinary Proteose of Orial — Guy's Hospital, London (9)
5. Histaminase and Various Other Histamine Preparations (10) (10-A) 10-B)
6. Potassium Chloride (11) (12)
7. Intravenous Use of Triple Distilled Water
8. Peptone Injections (13)
9. Vitamin "C" (14) (15)

Many other drugs and schemes, too numerous to mention, are used and discarded by the medical profession in the field of allergy. There is, however, occasional merit in some of the above medicines when the proper indication presents itself, in conjunction with other measures.

II. THE FOUR R's IN THERAPEUTICS FOR ALLERGIC INDIVIDUALS

In the instructions given to our classes in allergy, an effort has always been made to emphasize the importance of concentrating on the following four "R's" in the use of drugs:

1. THE RIGHT *DRUG*
2. THE RIGHT *WAY*
3. THE RIGHT *TIME*
4. THE RIGHT *DOSE*

Doctors are often disappointed in the results from the use of drugs and other therapeutic measures. Unfortunately, they become "drug nihilists" and drift along in the practice of medicine. Quite often they turn to the detail man, or drug salesman, for post-graduate information. They mostly prescribe the new drugs appearing on the market not remembering their content. For example: An extensively advertised medicine was given to a patient by the physician. Result: The patient became much worse. The disappointed doctor found out the patient was sensitive to acetyl-salicylic acid which was one of the main ingredients in the capsule.

In the hands of the general practitioner, the treatment of allergic conditions will result in disappointment and failure, if it depends on medicines alone. It is important that each patient be given the proper allergic investigation, followed by specific immunologic and desensitization treatment. The latter has to be carefully planned and carried out regardless of how long it takes. The physician who resorts to short-cuts and hopes to cure his patient with drugs alone, prevents or delays the allergic and immunologic investigation of his patients. One must not forget that preventive measures in the early clinical stages of various allergic syndromes may stop the development of complications, which may be difficult to cure afterwards.

III. THE IMPORTANCE OF OBTAINING RELIABLE INSTRUCTIONS

One-week post graduate courses in allergy, given once or twice a year, under the auspices of the National Allergic Societies, will be of great help to the general practitioner. This *Monograph on Clinical Allergy* was compiled by the author for just this purpose.

It is designed to give the general practitioner a concentrated and accelerated course in clinical allergy at home.

It is the further aim of this monograph to:

1. Point out all difficulties encountered in the study of various allergic patients.

2. Inform the physician how to arrive at a correct diagnosis of the various allergic clinical syndromes.
3. Familiarize the general practitioner with our new methods of immunology and desensitization, especially in pollen, dust, and bacterial allergy.

Chapter One

ECONOMIC AND HEREDITARY FACTORS IN ALLERGIC DISEASES

I. The Economic Aspects of Bronchial Asthma and Other Allergic Diseases

II. The Question of Heredity in Allergy

III. No One Standard Classification is Possible for All Allergic Syndromes

IV. Difficulties in Allergic Diagnosis and Treatment

I. THE ECONOMIC ASPECTS OF BRONCHIAL ASTHMA AND OTHER ALLERGIC DISEASES

The allergic person has a cellular mechanism which is easily disturbed and thrown out of physiologic balance. He has a very slow recuperating power and in some instances (fortunately very few) there is very little or no recuperating power. The probable number of asthmatics, including other allergic syndromes, is approximately 8 per cent of the population. The majority of them are able to pursue their regular occupations. About one per cent of the allergic population are unable to support themselves. They are an everlasting burden to their immediate families, to their community, and unwelcome guests at local hospitals. It is not unusual for the bronchial asthmatic to spend weeks and months in one hospital or another, without any benefit. Most of the hospitals do not have properly organized allergy departments, dust-free rooms, allergen-proof encasings or sealed rubberized covers for the pillows and mattresses, necessary for the relief and treatment of the asthmatic. Disappointed, and with very little con-

fidence in the final outcome, patients usually do not follow the course of treatment outlined, but migrate to Southern and Western States, seeking relief in new climates.

Every allergic individual must consider his future from an optimistic point of view. He must have confidence in himself, with the hope that he will recover and return to a normal life. However, he cannot leave to chance the treatment and the recovery from any of his syndromes. Proper plans must be made by parents for the future treatment and care of allergic children. Adults must make appropriate plans to be under supervision and constant medical care. The responsibility for the preventive measures and treatment of allergic patients should be placed on the individuals themselves. In most instances, it is the negligence on the part of the individuals to carry out instructions given to them by the family doctor, even after consultation with the allergy specialist. It is necessary for them to persevere in the follow-up treatment, though it may take months and years to recover. Some of the bronchial asthmatics are victims of high pressure salesmanship and advertisements for various nasal and throat spraying outfits. While it does relieve them occasionally in emergencies, they depend upon these sprays and neglect to pursue the proper course of treatment, which may be slow, but may give them more permanent relief and cure in the long run. Organized campaigns are necessary to endow rooms and beds for the treatment of bronchial asthma, to raise sufficient funds for research, under special committees appointed by the American Academy of Allergy, to find means of fighting this disease. One of our members of the American Academy of Allergy (16) succeeded in procuring a Western National Sanitarium to offer proper hospital care for children who suffer from bronchial asthma. The latter disease incapacitates many people and it is imperative that communities raise funds to help cure these allergic patients.

II. THE QUESTION OF HEREDITY IN ALLERGY

In clinical or statistical investigations, it is advisable not to use the term, *a non-allergic person*, but instead, *a person who has no allergic clinical symptom.*

Active allergic symptoms may begin in a person at any age. Some

one may be only potentially allergic all his life time. On testing, he will give positive local reactions. At any time in this person's life when the balanced state of health is disturbed, he will turn toward the clinical allergic side with the appearance of symptoms of asthma, fall hay fever, spring hay fever, perennial rhinitis, or whatever they may be. The above facts make statistical studies with reference to heredities in allergy misleading and unreliable. Parents, who are assumed to be free from active allergic symptoms may still transmit the tendency toward the allergic state to their offspring. Either one or both parents may be potentially allergic, as proven on many occasions, when they volunteered for allergic studies. Approximately 60 per cent of them gave positive reactions and about 25 per cent developed active clinical symptoms many years later.

"Is allergy hereditary?", is a question always on the mind of the patient as well as of the doctor. While with some it is only of general interest, with others it is a vital problem. In several instances, betrothals were broken, when one of the betrothed discovered that the mate-to-be was also allergic. A great deal of statistical knowledge has been accumulated and a great deal of discussion pro and con has been going on. It is best to state the facts as we find them in our allergic clinical experiences.

1. In twenty-six families, in which both parents have clinical allergic symptoms for the last fifteen years, each family has one to three children who do not have any allergic manifestations whatsoever.

The clinical manifestations in the case of both parents under our care vary. One of the parents may be subject to fall hay fever and asthma, hives and dermatitis, and the other parent may have rose hay fever and perennial rhinitis.

2. In thirty families, where both parents are free from any clinical manifestations, there is at least one child in each family suffering with one or several allergic clinical symptoms.

3. In sixteen families, where only one of the parents is free from allergic symptoms, one out of four children has active clinical allergy.

4. In four pairs of identical twin girls where one of the parents has active clinical symptoms, only one of the twins in each case has some allergic manifestation. They were observed from their twelfth

to their twentieth year. The other twin has been perfectly free from any allergic symptom. All of these twins are married and their children are free from clinical allergy, including the children of the allergic twin (children five years old).

One family is of interest in regard to the following facts. The father died of bronchial asthma. The mother suffered from hives and angioneurotic edema and died suddenly, cause unknown. They had four sons and three daughters, who have been watched from a medical and allergic standpoint for the last twenty years. Only one son has perennial rhinitis, and his daughter (granddaughter) has dermatitis and pruritis. The other children were perfectly free from any clinical allergy. Of three grandchildren, a daughter's daughter has perennial hay fever, and of another son's two daughters, one has perennial hay fever and the other has fall hay fever.

Comment: We know that parents who are potentially allergic and are free for the time being from any clinical symptoms, can transmit the allergic tendency to their offspring. Human statistical data is insufficient to warrant any predictions as to any given individuals with reference to their children. However, it is advisable for asthmatics (especially if the woman is suffering from recurring attacks of asthma) not to have children irrespective of the hereditary transmission of these syndromes. Whether there is or is not a transmission of the allergic state may be proven in the future by biologists. For the present, it is our experience that those who have a tendency to asthmatic syndromes should refrain from having or raising children, no matter how long a period of freedom from attacks they have enjoyed. The excitement and the extra work which is entailed in raising children may be responsible for a recurrence of severe attacks in either parent.

III. NO ONE STANDARD CLASSIFICATION IS POSSIBLE FOR ALL ALLERGIC SYNDROMES

An allergic state is a reaction to non-toxic substances. It is highly specific and the person is ill only when he is exposed to protein and non-protein factors, if sensitive to them. When a patient is exposed to proteins to which he is sensitive, the clinical symptoms of the patient are in direct proportion to the amount and time of the exposure.

There are so many extrinsic and intrinsic etiologic factors responsible for the pathologic manifestations producing bizarre disturbed physiologic functions in allergics, that any attempt at one standard classification is impossible. It may be necessary to have several classifications to cover every possible phase of disturbance found in the cellular structure and in the physiologic functions of the allergic individual. Classifications in general are only of academic interest. However, it helps the physician and gives him a conception of all the etiologic and pathologic factors possibly involved in any one allergic individual that may come under his care.

1. Classification can be made from the point of view of positive reactions to various allergic protein tests, such as:

(a) Animal epidermals or inhalants
(b) Foods
(c) Pollen
(d) Bacterial protein
(e) Dust
(f) Molds
(g) Drugs
(h) Gases, fumes, odors, and so forth
(i) Chemicals
(j) Dye contacts

However, we cannot strictly adhere to this form of classification, because we find single states of sensitivity only occasionally, and in most instances, multiple states.

2. Classification is possible as to the location of shock tissue involved, such as:

(a) Eyes (conjunctiva)
(b) Nose and throat (mucous membrane)
(c) Roof of mouth
(d) Bronchial system
(e) Pulmonary system
(f) Gastro-intestinal tract
(g) Skin or dermatologic tract
(h) Urinary bladder

Only a few patients will have one shock tissue involved. In the majority of instances, many shock tissues and occasionally all the shock tissues are involved.

Thus, *one classification* of all allergic syndromes is well nigh impossible.

IV. DIFFICULTIES IN ALLERGIC DIAGNOSIS AND TREATMENT

The science of hay fever, asthma and allied diseases has been developing for centuries. The modern conception of allergy has reached a climax only in the last forty years. Allergy has opened a new approach to the diagnosis and treatment of many diseases. The conception of allergy and its benefit to clinical diagnosis has no parallel in the history of medicine.

In simple, or non-complicated allergic patients, (comprising about 25 per cent), the diagnosis and therapeutic results are both demonstrable and spectacular. The other 75 per cent of allergic patients present very difficult and complicated problems. This may be due to:

1. Incomplete Examinations.
   (a) Incomplete histories.
   (b) Incomplete physical examinations.
   (c) Incomplete laboratory tests.
2. Lack of reliable tests for drugs and similar allergens by skin testing.
3. Incomplete testing and provocative positive reactions.
4. Differences in evaluation of testing materials and multiple positive reactions on testing.
5. A. The long disputed value of bacterial tests.
   B. The chronic common cold.
   C. Infectious or epidemic colds.
6. Fear of constitutional reactions.
7. The difficulty to differentiate the associated complications of bronchial asthma.
8. Poor results from pollen desensitization and emergency pollen treatment.
9. The problem of exercise and rest in allergic diseases.

CHAPTER TWO

INCOMPLETE EXAMINATIONS

I. Incomplete Histories
II. Incomplete Physical Examinations
III. Incomplete Laboratory Examinations

I. INCOMPLETE HISTORIES

The general practitioner or the student in allergy usually does not obtain a good, authentic history. One must be familiar with the many phases of allergic possibilities to obtain all data possible from patients and their families which could help to formulate a plan for the study and treatment to follow.

The following points may be of value:

1. In which season of the year did the allergic condition begin? Is it worse in winter or in summer, or is it a perennial condition? If it is worse in winter, it may be due to bacterial allergy, which may possibly be responsible for chronic common head colds and associated winter bronchitis, followed by bronchial asthma. If it is worse in summer, it may be due to pollen of the various seasons. The main symptoms may coincide with certain dates of pollination. It may be due to molds, prevalent in the summer months. It may be a problem of physical allergy, a state of sensitivity to cold air, which may be responsible for the continued attacks of bronchitis and asthma in the winter months. On the other hand, it may be a state of sensitivity to hot air which may be responsible for attacks of bronchitis and asthma in summer months.

2. The effect of business or occupation: Was there a two or four weeks' vacation (environmental change) to country, seashore or mountains, and with what results? It is very important to ascertain the business or occupation which may be a factor directly responsible for the symptoms.

(a) Bakers and confectioners. There may be present a sensitivity to various flours, eggs, cocoa, oils, or other ingredients which are used in the manufacturing of bread, cakes and candies.

(b) Vegetable stores may add to the discomfort of patients who are sensitive to pollen and dust.

(c) Furs and clothing — which may be responsible for dust and various inhalant and epidermal sensitivities.

(d) Paint and varnish — may be responsible for various chemical irritations.

(e) Stationery stores, drug stores, textiles and tanning factories, each in turn may be responsible for some specific etiologic factor.

3. Is there any local or general itching?

4. Is the patient subject to colds, hoarseness, sneezing spells, nasal obstruction, salivation, rhinorrhea, conjunctivitis, or mucopurulent nasal discharge.

5. Is there any cough? Is it dry or associated with purulent expectoration; worse when going to bed or getting up? Is it the same throughout the year?

6. Is there wheezing and dyspnea at any time, or only in bed — or after strenuous or mild exertion, coughing or laughing?

7. Was there any medical care? What were the benefits or failures from physicians, hospitals, drugs, and the like.

8. Was there any contact with animals, plants, odors, especially from camphored clothes or cedar closets, fumes in and around the home and business?

9. Does the patient live in an old, moldy, damp house with old carpets and rugs and old mohair covered furniture?

10. Is there any other personal allergy or family allergy?

Good histories obtained from patients help in making a diagnosis and may save a great deal of time and expense in the search for the factors responsible in the patient's allergic episode. The following cases will illustrate this:

CASE NO. 1

I. S.: Male; white, sixty years old, married, three children. Occupation: Has worked in a hardware store for the past fifteen years. Called July 1943.

C. C.: Asthma of ten years' duration. It always starts around the middle of June, lasting throughout the month of July and the middle of August. Patient is perfectly well the rest of the year. During the two-and-a-half summer months he suffers from constant dyspnea, wheezing and very dry coughing spells. No rhinitis, no nasal obstruction and no itching of the eyes and nose. He feels better in rainy weather. On one or two occasions, when he went to the seashore, he recovered from his asthmatic attacks on the second or third day, and remained well for the duration of his vacation.

P. H.: Has always been well. Never had any illnesses, except when he began to suffer with summer asthma ten years ago. No family allergy and no other personal allergy. He does not know what factors precipitated or were responsible for the continuation of his attacks.

He was tested for inhalants, food, pollen, dust, bacteria and molds. He did not show any positive local reactions to any protein tests. Conjunctival pollen tests were all negative. The possibility of pollen and mold were checked and re-checked, beginning with mild to stronger dilutions — however, these were all negative. He did not show any inflammatory disturbances in his nose and throat. A special study of his day by day occupation in the handling of various materials at the hardware store revealed that he was handling a great deal of camphor, moth balls, tar paper and other products used in the summer season. This was suggested to the patient as the possible cause of his asthma attacks.

After much questioning, he admitted this possibility and added that several years ago, one mid-winter, while visiting a motion picture theatre, a person sitting in front of him took off and shook a scarf which contained a great deal of camphor. The patient was immediately seized with an attack of hay fever and asthma. It was self-evident that this patient was sensitive to all camphor materials, which were responsible for his summer asthma. To test this possibility, the patient was advised to request a leave of absence from his store for several weeks and to stay away from all camphor materials. No other medication was prescribed for the patient.

For the first time in ten years, he was perfectly free from attacks of summer bronchial asthma.

Comment: The perseverance in the study of the history was actually responsible for the location of the etiologic factors in this patient's summer asthma.

CASE NO. 2

J. M.: Male, white, twenty-two years, single, salesman. Was referred by his family physician for a complete allergic study.

C. C.: Nasal obstruction, alternating with sneezing and rhinitis, of several months' duration. Occasional coughing and wheezing: worse at night, better in daytime, at work. Also marked dermatitis of six months' duration, which extended from the area around both ankles, up the legs to below the knee joint. It involved the dorsum of both hands and wrists and extended to within two inches of the elbow joint. It began to spread to neck and face. It was associated with extreme pruritis — better in the daytime — worse at night. Sometimes, this kept him awake all night scratching arms and legs to relieve itching, which was followed by crustrations and oozing sores. Ointments and change of clothing did not relieve his condition. It had become progressively worse during the past six months.

P. H.: Eczema of the scalp and buttocks in infancy. Had several attacks of hives — no angioneurotic edema. No other personal allergy, no other family allergy.

He was asked if he had had a change of environment, new clothing, or if he knew of any cause which may be responsible for his condition. It was learned that he had been engaged to a girl, for the last six months, and had called every evening at his fiancée's home. There he came in contact continually with her pet dog, who brushed against his legs and ankles and against his body. One could almost have made a diagnosis right away that the dog-contact was responsible for his rhinitis, coughing, and dermatitis.

However, he had a complete testing for inhalants, foods, pollen, bacteria, and house dust. He was negative to all the tests. He did, however, give a plus 4 reaction to dog hair. It was evident that the rhinitis and dermatitis were due to dog-contact. The animal was removed from the house, and he was well in a few weeks.

CASE NO. 3

A. Y.: Female, white, twenty years, single, teacher (athletics and swimming).

C. C.: For the last five months she began by having attacks of itching of the nose and eyes which would invariably be followed by sneezing spells and lacrimation, also by a rash around the neck, face, upper part of her chest, and around the wrists of both arms. It had become impossible for her to put on a bathing suit and give swimming lessons on account of the excessive oozing and crustrations she had over the above mentioned parts of her body. All medication by her family doctor failed and he referred her for a complete allergic study.

P. H.: She had been subject, occasionally, to attacks of hives and poison ivy in youth. Other past history was irrelevant.

F. H.: Maternal grandmother had bronchial asthma. Maternal aunt has fall hay fever.

On close questioning, it was found that at the time of the appearance of the rash, she had bought a new camel's hair coat. It was self-evident from the history and location of the lesions, (around the neck and wrists), that it was a case of hay fever

CASE NO. 7*

S. D.: Male, white, age forty-one, plumber. Called March 9, 1941, with a history of coughing and wheezing since January 1940, associated with marked expectoration. On examination, the chest revealed an impairment on percussion below the left apex with diminished bronchial breathing, both anteriorly and posteriorly. Two months later it involved the upper half of the left chest as shown by the X-ray. Autopsy confirmed the diagnosis of bronchogenic carcinoma.

III. INCOMPLETE LABORATORY EXAMINATIONS

Patients who call at the *office of the family physician* are sometimes reluctant to have all the necessary laboratory tests made. Consequently laboratory examinations, which would possibly have been of help in the diagnosis and treatment of a patient, were overlooked. *Some of the bronchial asthmatics have pulmonary tuberculosis.* While the latter may not be the cause of bronchial asthma, nevertheless, it may influence the outline and course of treatment. Therefore, the sputum examination for tuberculosis is important. In our experience 3 *per cent of the patients* who *suffer with bronchial asthma* have positive tuberculosis. (17)

About 4 per cent of the bronchial asthmatics have diabetes as a complication.

We have encountered several patients with paralysis of the vocal chords, referred as asthmatics for allergic testing. To the novice, it appears as a case of bronchial asthma on account of the presence of dyspnea and wheezing. The laboratory revealed a plus 4 Wassermann. The patients finally admitted a history of syphilis of many years' duration. The real diagnosis (syphilis of the vocal chords) was then established.

Comment: It is necessary to re-emphasize the importance of:

1. A painstaking history.

*See Fig. 4.

2. The proper evaluation of the complete physical examination.
3. The proper study of all the laboratory findings, including X-ray.

It is frequently impossible for the general practitioner to devote the time and patience required to do the necessary detective work in complex allergic problems. He will save himself much time, energy, and concern by cooperation with a competent allergist.

After much questioning, he admitted this possibility and added that several years ago, one mid-winter, while visiting a motion picture theatre, a person sitting in front of him took off and shook a scarf which contained a great deal of camphor. The patient was immediately seized with an attack of hay fever and asthma. It was self-evident that this patient was sensitive to all camphor materials, which were responsible for his summer asthma. To test this possibility, the patient was advised to request a leave of absence from his store for several weeks and to stay away from all camphor materials. No other medication was prescribed for the patient.

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P. H.: Eczema of the scalp and buttocks in infancy. Had several attacks of hives — no angioneurotic edema. No other personal allergy, no other family allergy.

symptoms and contact dermatitis due to camel's hair. However, she was tested for inhalants, foods, pollen, bacteria, and house dust. She was negative to everything except camel's hair (plus 4). She discarded her camel's hair coat and she improved from all allergic symptoms.

Comment: Rabbit hair dresses, new mattresses, new mohair furnishings, cats and dogs received as pets, Sunday driving in dust-laden cars — and many other allergens, too numerous to mention, have revealed themselves from a detailed history, as the only etiologic factors responsible for asthma, perennial rhinitis, and many other allergic syndromes. Occasionally, it may take several months of the investigation and much perseverance in the study of the history of the patient, to reveal the true causes.

II. INCOMPLETE PHYSICAL EXAMINATIONS

We have many patients who suffer with severe forms of dyspnea, coughing, and wheezing, who are, however, not typical asthmatics.

Occasionally we have patients referred for allergic studies, whose main difficulty is incipient pulmonary tuberculosis, or cardiac failure. (16)

On occasions, patients who were treated for bronchial asthma with coughing and wheezing were having, as a complication, intermittent fevers. When properly examined, they revealed small lung abscesses not demonstrated by physical signs, but revealed by careful X-ray studies.

Other patients had been under the care of their family physician and treated for bronchial asthma without relief. On physical examinations they reveal early or massive growths in the upper or lower portion of the chest, either right or left sided bronchogenic carcinoma. This is clearly illustrated by the following four case histories and their respective X-ray examinations.

When there suddenly develops in a person past middle life a cough which does not respond to ordinary care and medication, we must consider a thorough chest examination, including X-ray. This type of a cough does not follow a cold, nor is it associated with an acute upper respiratory infection.

CASE NO. 4*

H. P.: Male, white, age fifty-six, salesman. Was referred for an allergic study.

C. C.: Cough, dyspnea and occasional wheezing for the last six months. No personal or family allergy. Blood chemistry, blood count, were within normal limits, Wassermann and Kahn negative. Had lost 15 lbs. On physical examination, there was an absence of breath sounds anteriorly and posteriorly in the left chest to below the fourth rib. X-ray confirmed a dense tumor mass in the left chest. Four months later the patient died of pulmonary edema. An autopsy revealed bronchogenic carcinoma.

CASE NO. 5**

M. B.: Male, white, age fifty-five, bookkeeper.

C. C.: Dyspnea, wheezing, coughing for the last six months. Cough occurred any time of the day or night. It was dry with very little expectoration. Was referred by family doctor for an allergic study. On physical examination, diminished breath sounds were found and other evidence of tumor mass at the upper lobe of the left chest as shown by X-ray. He died five months later of pulmonary edema due to metastatic carcinoma.

CASE NO. 6***

W. G.: Male, white, age sixty, storekeeper. Called June 28, 1940, complaining of coughing and expectoration of one year's duration. Marked dyspnea weakness, and occasional wheezing. On examination, he showed impairment in the right upper chest with amphoric breathing, but no rales. Diagnosis of tumor of the right lung was made, and confirmed by X-ray. Four months later, an autopsy examination proved bronchogenic carcinoma.

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*See Fig. 1, appendix, after p. 198.

**See Fig. 2.

***See Fig. 3.

CASE NO. 7*

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III. *INCOMPLETE LABORATORY EXAMINATIONS*

Patients who call at the office of the family physician are sometimes reluctant to have all the necessary laboratory tests made. Consequently laboratory examinations, which would possibly have been of help in the diagnosis and treatment of a patient, were overlooked. Some of the bronchial asthmatics have pulmonary tuberculosis. While the latter may not be the cause of bronchial asthma, nevertheless, it may influence the outline and course of treatment. Therefore, the sputum examination for tuberculosis is important. In our experience 3 per cent of the patients who suffer with bronchial asthma have positive tuberculosis. (17)

About 4 per cent of the bronchial asthmatics have diabetes as a complication.

We have encountered several patients with paralysis of the vocal chords, referred as asthmatics for allergic testing. To the novice, it appears as a case of bronchial asthma on account of the presence of dyspnea and wheezing. The laboratory revealed a plus 4 Wassermann. The patients finally admitted a history of syphilis of many years' duration. The real diagnosis (syphilis of the vocal chords) was then established.

Comment: It is necessary to re-emphasize the importance of:

- A painstaking history.

4.

2. The proper evaluation of the complete physical examination.
3. The proper study of all the laboratory findings, including X-ray.

It is frequently impossible for the general practitioner to devote the time and patience required to do the necessary detective work in complex allergic problems. He will save himself much time, energy, and concern by cooperation with a competent allergist.

LACK OF RELIABLE SKIN TESTS FOR DRUGS AND SIMILAR ALLERGENS

I. Drugs
II. Anesthetics
III. Fumes and Gases
IV. Odors

The investigation of sensitivity to drugs, nitrous oxide and ether anesthesia, industrial fumes, gases and odors, is still in its infancy. The patients are usually unaware of the possible relationship of these factors in the production of their bronchial asthma attacks. The alert and experienced clinician may suspect the above etiologic factors.

I. DRUGS

We have witnessed patients suffer attacks of asthma and collapse following the use of drugs, such as aspirin, codeine, morphine, cocaine, intravenous sodium iodide, and the like. We have also seen marked exfoliative dermatitis after administration of pheno-barbital, sulfa groups, recently penicillin, and many other drugs.

We do not forbid the use of milk, eggs, wheat, and the like, for everybody, just because some patients are very highly sensitive and become sick from these foods; nor is it justifiable to forbid the use of any valuable drug, such as insulin, sulfa groups, penicillin, quinine, digitalis, ipecac, and others because we meet some patients who are highly sensitive and cannot take them.

However, quite often we find statements in the literature by medical authorities, forbidding this or that drug, because they were unfortunate in meeting with some untoward results.

The following warnings are often used:

Do not use morphine in asthmatics, because a death occurred after the injection of morphine. Do not use silver-nucleinate solutions because someone had a case of argyria. Similar warnings are appearing in the medical literature forbidding the use of valuable drugs just because someone happened to have a patient with a high degree of sensitivity followed by constitutional reactions. The percentage of the population at large, who have drug sensitivity, may be one in one thousand. The physician must always be on the alert for the possibility of drug sensitivity. He must use precaution when obtaining a positive history from the patient.

Because we have no reliable tests for drug sensitivity, all suspected drugs should be avoided. We should begin with the smallest dose possible with the intention of noting the reactions of the patient. If no bad effects occur, gradually increase the amount of the drug to its physiological effect. For the same reason, simple Rx. rather than "shotgun" Rx. are advised.

II. ANESTHETICS

Post operative coughs, bronchitis, and asthma following nitrous oxide and ether anesthesias fortunately are not frequent. When coughs do occur the cause is rarely recognized. One or two days after the operation, a cough becomes apparent. In a week or ten days attacks of asthma develop. Possibly, the anesthetics irritate or damage the mucous membrane of the bronchial system in some way and destroy their physiologic function.

On testing one may obtain positive skin reactions to many allergens, but they prove to be only potential factors, not actually responsible for the asthmatic attacks.

This may be illustrated by the following cases:

CASE NO. 8

I. R.: Female, white, thirty-nine years old, married, dressmaker.

C. C.: Bronchial asthma of five years' duration. She had been

perfectly well until five years ago, when she had three teeth extracted under nitrous-oxide gas anesthesia. The following day she began to have attacks of coughing and wheezing. Since then she has been suffering from bronchial asthma.

P. H.: Measles three times at ages of three, six and ten. Left-sided dry pleurisy ten years ago. Had attacks of fall hay fever for ten years. For the past three years her attacks of bronchial asthma resisted any form of treatment. Paradoxically, since she had developed her attacks of bronchial asthma, she had been free from fall hay fever symptoms.

Patient was tested for inhalants, foods, pollen, bacteria, and house dust. She gave a positive skin reaction to mixed ragweed, (plus 4), and mixed grasses, (plus 3), and to various bacteria of the respiratory system.

CASE NO. 9

I. J. L.: Female, white, thirty-seven years old, married.

C. C.: Bronchial asthma, eight years' duration.

H. P. I.: Eight years ago she had had a right mastoid operation. Several days later she developed ether-pneumonia. When she recovered from the pneumonia, she began to have attacks of bronchial asthma.

P. H.: Patient had measles twice, at the ages four and ten. Always subject to chest colds, winter or summer, for the last fifteen years. She has had bronchial asthma ever since the ether pneumonia.

Several years ago she had a nasal polypectomy with no improvement. A year or so later she had seven teeth extracted under local anesthesia, (in the course of several weeks), with no improvement in her asthmatic condition.

Patient was tested for inhalants, foods, pollen, bacteria, and house dust. She was positive to:

(a) Grass pollen
(b) Various bacteria of the respiratory system
(c) Autogenous vaccine made from the culture of nose, throat, and sputum (each plus 1).

CASE NO. 10

R. L.: Female, forty years old, married, two children.

C. C.: Bronchial asthma of two years' duration.

H. P. I.: Asthma had started shortly after an operation for a kidney stone under ether anesthesia. On second day after operation, she had developed shortness of breath, wheezing, cough and expectoration. The attacks have been progressively worse, with coughing day and night, ever since. Has to get up every one or two hours during the night. At times her expectoration is so severe she is nauseated by the discharge. Nasal obstruction; no sneezing spells. During the past few months she has developed severe itching of the eyes and nose. Dyspnea on exertion.

This patient was in several hospitals from one to two months at a time. Had many bronchoscopic aspirations, also vaccines made from the aspirated material for treatment, but with no improvement. Went to shore for several months and derived some benefit.

P. H. and F. H.: Irrelevant.

Comment: We have records of eleven similar cases where the initial attacks of asthmatic bronchitis can be traced to nitrous oxide and ether anesthesia. These patients have either a sensitivity to ether, nitrous oxide gas, and the like, or the anesthetics act as a trigger mechanism in a potentially allergic individual. Attacks of bronchial asthma are precipitated by general anesthetics in patients who are subject to bacterial allergy. All of them have been subject to colds for many years and likewise all of them gave positive skin reactions to various bacteria of the respiratory system.

It is our opinion that patients who are subject to colds and respiratory diseases, should not have ether or nitrous oxide anesthesia by choice. They should have either spinal, intravenous, rectal, or local anesthesia, if possible.

III. FUMES AND GASES

Fumes and gases from various chemical industries have at times initiated and kept up the attacks of bronchial asthma without the

doctor or patient having any suspicion as to the cause. Hydrochloric acid, sulphuric acid, fumes from sulphur candles, also fumes emanating from acetylene blow torches have been responsible for asthmatic attacks.

The factory management must recognize the economic aspects of bronchial asthma, which, in most instances, leads to invalidism. The United States Public Health Service has made ample provision to protect the workers in various chemical industries. It is important for the factory management to follow the advice of this organization in order to prevent respiratory diseases. When a real sensitivity has been shown to exist, adjustments and changes must be made or workers should not be allowed to work in chemical plants.

IV. ODORS

Odors emanating from various industries, such as paints, confectioners, bakers, hairdressing, barber shops, and especially from a patient's home environment, are many times overlooked as a cause for various allergic syndromes.

For years we had to make special investigations on patients whose attacks of rhinitis, bronchitis, and bronchial asthma began *in the spring and fall of the year,* to establish a reasonable cause. All our investigations have failed to demonstrate positive reactions to any allergic factors, including the pollen prevalent in the spring and fall of the year, or to molds, except in some instances positive reaction to pyrethrum, (present in most insecticides).

The bronchial asthma and rhinitis attacks, evidently, were not due to bacterial allergy because they did not start with acute colds, or acute upper respiratory infections, nor were the attacks due to any changes in the weather.

After many years of close observation, it was finally traced to various odors emanating from insecticide materials handled when storing away clothing and household furnishings in the spring of the year. Similarly, in the same patients, their attacks began again in the fall, when clothing and household materials were taken from cedar wood, camphor, and tar paper containers. The wearing apparel and house-

hold furnishings had become saturated and retained the chemicals and odors for many months.

It has been found that many of these allergic patients are not cognizant of the odors from chemicals sprayed in beds, springs, and mattresses, with the purpose of removing ectoparasitic insects such as bed bugs, roaches, and the like, during the fall and spring house cleaning.

Many of the allergic patients lose their keen sense of smell and are not conscious of the odors emanating from their clothing. They improved, however, when their clothing was sent to the cleaners and, in addition, was ventilated in the outside air and sunshine — clearing away all obnoxious odors.

CHAPTER FOUR

INCOMPLETE TESTING AND PROVOCATIVE POSITIVE REACTIONS

I. *Incomplete Testing*

II. *Provocative Positive Reactions*

III. *The Passive Transfer or Indirect Method of Testing*

IV. *Patch Testing for Contact Dermatitis*

V. *Record Charts of Complete Testing*

VI. *Two Sets of Hypodermic Needles*

VII. *Testing Charts Including: (a) Foods, (b) Inhalants, (c) Pollen, (d) House Dust, (e) Bacteria, (f) Fungi*

I. *INCOMPLETE TESTING*

Many patients give a history of having been tested before calling at the office. Unfortunately, the testing done by the general practitioner was frequently incomplete, no matter what system was used. Patients state they have had approximately twenty tests. Usually, they are not informed of the results.

Any allergic individual, who has been clinically ill for some time, whether a respiratory or a dermatologic problem is at issue, should have a complete allergic investigation, so as to be of value in planning a course of treatment.* The patient should always be informed of all

*See Testing Charts, pp. 49-51.

the positive findings so that he may intelligently cooperate with the doctor.

The general practitioner does some testing himself, but mostly depends upon testing laboratories for his allergic diagnosis. The laboratories do not have the means of controlling and checking the potency of their testing material on patients, but the allergist is in a position to do this. Quite often, testing done by weak or deteriorating solutions may produce negative reactions and render an unreliable report.

On the other hand, patients with dermographia give many spurious or false positive reactions. In a case of dermographia, for instance, the skin swells up on slightest handling and produces marked erythema, which makes accurate testing impossible.*

Every patient with dermographia must be first placed on calcium and other similar medications to relieve the acuteness of the dermographia and erythema to make skin testing more reliable. The evaluation and testing of dermographic patients is certainly not in the province of the testing laboratory to render a report to the physician as to their allergic findings.

Another difficulty is encountered in testing infants. Their skin has not enough epidermal (lymphatic or capillary) infiltration to respond to the classical allergic reaction — such as wheals with pseudopods. It may not be generally accepted, but in our experience skin testing in infants under a year, or two gives little or no satisfaction. We find that an area of local erythema is the only response to any intracutaneous injection.

II. PROVOCATIVE POSITIVE REACTIONS

Approximately 5 per cent of patients ill from seasonal pollen asthma do not give a positive skin reaction to the suspected pollen.

For many years the allergists have resorted to the conjunctival or ophthalmic test. It consists of placing mild dilutions of the suspected pollen extract, or a few grains of the pure, dry, suspected pollen in

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*See Fig. 5.

one eye, and have the other eye serve as a control. Invariably, the eye with the pollen instilled will become inflamed, red, and swollen, while the controlled eye will be free from swelling or irritation.

The positive conjunctival or ophthalmic test has been used as a deciding factor, and the patients are treated with the pollen to which they give a positive conjunctival reaction, provided the date of its pollination coincides with the date complained about by the patient.

In the beginning patients treated with this pollen do not have any local reaction on the arm. As dilutions are changed from mild to stronger concentrations, (in about the fifth or sixth concentration,*) the patients may begin to experience a large swelling of the arm with redness and wheals. From then on we have noticed on many occasions that patients have to have weaker dilutions, sometimes going back by one, two, or even three concentrations.

This form of positive reaction, appearing after several weeks or months of pollen injections, we term *provocative positive reaction.* From then on the patient behaves like any other patient who gives a positive skin reaction to pollen testing. Similar experience has been encountered with patients who receive injections of various estrogenic hormones in dilutions of different oils, such as almond oil, peanut oil, and the like.

After several months of weekly, or bi-weekly injections, the patients will begin to develop a sore arm. Occasionally, they may become very ill. Upon investigation the patients may state they are sensitive to peanuts or almond oil, and the like. If the injections are continued they are apt to have constitutional reactions.

This is illustrated by the following two cases treated by one of the authors.**

CASE NO. 11

M. S.: White, age thirty-eight, married, two children, druggist's wife.

H. P.: Secretion of milky fluid from left nipple, between menstrual periods for past nine months. Rest of history non-

*See Dilution Chart, p. 103.
**Dr. Bea Sterling Hollander.

contributory except that patient has had on several occasions hives from salmon and sardines. Well known gynecologist, who was consulted, advised injections of a pituitary preparation in peanut oil to be given twice a week intramuscularly.

Injections were given six times with no untoward results. Within several hours of the seventh injection, both arms and buttocks at the sites of injections became swollen to four times their normal size and the swellings were accompanied by extreme erythema and pruritis.

Relief was obtained with starch compresses and compound calamine lotion locally, small oral doses of ephedrine, phenobarbital, and calcium. On further questioning patient stated that peanuts always produced indigestion. Injections were discontinued. The patient was warned always to ask her physicians not to administer any parenteral medication in peanut oil.

Comment: This patient had a provocative positive reaction to peanut oil which was followed by a severe local and mild constitutional reaction to the seventh injection.

CASE NO. 12

H. M.: Female, white, thirty-four years, married, two children.

Called at office for intramuscular injection of liver 5 units/cc. every seven days, to aid recovery of moderate secondary anemia.

Past medical history irrelevant. No personal allergic history. Sister has diabetes. Father has fall hayfever.

After the fifth injection, (the first four were uneventful), she was placed on examining table by the nurse for an internal examination. Five minutes after the injection, she called our attention to the fact she was experiencing a numbness in hands and loss of power in fingers. In a few minutes she developed swollen lips and and tongue, unable to swallow, and was covered with hives and erythema from head to toe. She tried to lift her

head and fainted. Immediately 3 mm. of epinephrin (1:1000) was administered at the site of the last injection and repeated at fifteen minute intervals, for four doses. Became conscious after first injection of epinephrin but vomited at intervals for half an hour. Patient remained in office for two hours before she was comfortable enough to be taken home.

Comment: This patient had a provocative positive reaction to liver extract which was followed by a constitutional reaction to the fifth injection.

Medical literature reports many patients who give constitutional reactions after the fifth or sixth injection of estrogenic hormones in oily dilutions. It is our opinion that these patients have always been positive to various oils and the continual administrations of them produced a *provocative positive* reacting state.

We have had similar experiences after the injections of:

1. House dust extracts.
2. Autogenous vaccines.
3. Special catarrhal vaccines.

In asthmatic bronchitis, perennial rhinitis and many other allergic conditions, where positive reactions to any allergen cannot be demonstrated, we use this triad as a non-specific foreign protein treatment instead of typhoid vaccine intravenously or the many highly advertised preparations on the market.

These patients are being treated with the above triad most cautiously, i.e., starting with mild dilutions, then gradually and slowly increasing to stronger concentrations; results are very good.

After several months of treatment, they would invariably begin to show marked local positive reactions—*a provocative positive reaction.* The dose for each of the concentrates has to be reduced from 6 mm. to 1 mm, or to weaker dilutions.

III. THE PASSIVE TRANSFER OR INDIRECT METHOD OF TESTING

The passive transfer technique was originated by Prausnitz and Kustner in 1921. (18) They demonstrated the presence of allergic antibodies (sometimes called *reagens*) in the blood of one of them who was sensitive to fish proteins, and who had severe bronchial asthma symptoms. His blood serum was injected intracutaneously in the upper outer arm of the other doctor. Two days later, fish protein testing material was injected intracutaneously in the same site, and was injected as a control two inches away from the site which had no infiltration of the serum. A few minutes later, a positive reaction was obtained in the serum site and no reaction was obtained from the control site. The doctor who demonstrated the positive passive transfer on his arm was subject to fall ragweed hay fever. His blood serum was injected intracutaneously in the other doctor's arm and in twenty-four to forty-eight hours no positive reaction could be demonstrated to the intracutaneous injection of ragweed extract in the serum site.

M. Waltzer and other investigators in the field of allergy have done exhaustive research in this line. (19)

Since then, this passive transfer technique has been utilized by M. Waltzer and other allergists to demonstrate the presence or absence of allergic antibodies. It is usually done by taking the serum from the allergic individual and injecting intracutaneously into sites of the outer upper arm of one who is free from allergic symptoms. Then twenty-four or forty-eight hours later, protein testing material is injected in the same serum site to demonstrate the presence or absence of positive reactions.

It is and has been used for indirect testing of patients, such as:

1. Adults and infants who have extensive dermatitis with very little or no clear skin for testing purposes.
2. Adults who are too ill to undergo sittings for testings.

3. *Infants and children in whom direct skin testing is sometimes* difficult both to perform and to interpret.

On the other hand, many other investigators find it impractical. It is, in our opinion, not always reliable, i.e., patients will have clinical symptoms to those proteins that cannot be demonstrated on passive transfer. We have utilized it for classroom demonstrations, where it is spectacular when successful, but have rarely needed it for clinical diagnosis.

IV. PATCH TESTING FOR CONTACT DERMATITIS

Patch testing was first described by Cook and Spain, to demonstrate the local response of the skin when in contact with an irritant. (20) (21) A small piece 2" x 2" of white blotting paper was saturated with a mild solution of poison ivy extract. It was applied to the flexor surface of the arm. When removed, in twenty-four or forty-eight hours, there was present on the skin an erythematous vesicular eruption. This was read as a positive patch test. Since then, it is and has been used to determine the state of sensitivity to any clothing material, dyes, chemicals, soaps, cosmetics, or anything that is suspected of being an etiologic factor producing dermatitis. The suspected article, or whatever it may be, is applied on a piece of white blotting paper or sterile gauze, bandaged with adhesive tape, and kept on for twenty-four to forty-eight hours. (Many supply houses for the allergist have special outfits for patch testings.) When removed, an erythematous area or the presence of vesicles is considered a positive patch test and the suspected material may be a cause of the dermatitis. The test is not always satisfactory, but it is advisable to do the patch testing for all suspicious contacts in the study of any person, to determine the causes of dermatitis.

Thus patch testing should be done for:

1. Various dyes in the cloth worn next to the body.
2. The kind of material worn, i.e., cotton, rayon, nylon, silk, camel hair, and fur.

3. Chemicals in various paint shops, i.e., paints, varnishes, paint- and varnish-removers.
   Chemicals in machine shops, i.e., oils and graphite.
4. Ingredients in various ointments, cosmetics, and other toilet articles.
5. Soaps, soap powders, cleansers, washing and cleaning chemicals, and many more objects found in homes and industries too numerous to mention. (22)

V. RECORD CHARTS OF COMPLETE TESTING

Testing charts numbers one, two and three are copies of the records we use in our clinics, as well as in our private offices. Each patient is given a copy of the tests which were done for him, with a proper interpretation of the positive and negative findings. The tests are made by the intradermal or intracutaneous method. The material for testing can be purchased in 1 cc. vials—1-10 glycerinated extracts. If stored in a cool place they will keep for some time. The material may be obtained from firms who handle exclusively allergic testing materials, or it can be obtained from any reliable pharmaceutical house. The above vials should be known as stock concentrated extracts. From the concentrates, one can make the desired dilutions in sterile physiologic salt solution.

The testing is done in the following order:

1. *Inhalants*

All inhalants are tested as per chart.* One must be careful when testing for horse dander, glue, flaxseed, cottonseed, and rabbit hair. Constitutional reactions have occurred from the above testings, unless one uses first a very mild dilution (1 to 20,000). If no local reactions have taken place, you may use dilutions of 1:10,000, but not stronger than 1:5,000. The rest of the inhalants may be used in dilutions of 1:3,000.

*See p. 50.

2. *Foods*

In case of testing for the food proteins one can make various dilutions from the concentrate extract. (1-10) Dilutions for testing purposes should be 1:500 up to 1:100.

All the commonly used foods such as eggs, milk, wheat, rye, oranges, cocoa, tomato, beef, pork, must be included. The rest of the foods on the list are to be tested only if the patient states that he eats them often. It is not necessary to test foods eaten very seldom, or only eaten once in several weeks.

3. *Pollens**

We test pollen in groups with dilutions as weak as 1:25,000 or 1:50,000.

(a) Sycamore group—containing sycamore, elm, maple and ash pollen.
(b) Oak group—containing oak and beech pollen.
(c) Mixed grasses—containing timothy, orchard, June and rye grass pollen.
(d) English plantain (by itself).
(e) Mixed ragweed group—containing ragweed short and ragweed giant in proportion 2 to 1.

4. *Bacteria*

Tests for bacterial proteins, which may be responsible for infections of the respiratory system, should be used in separate concentrations of 2,000 million per cc. Only three or four bacterial tests should be made at any one time. It may produce large local delayed reactions, which may take two or three days to subside.

All bacterial proteins in our private and clinical work have been supplied by reliable bacteriologic or pharmaceutical houses. Any physician can obtain his supply in the same way provided it is a uniform preparation for testing purposes.

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*Consult "Preparation of Various Pollen Extracts" in Chapter on Pollen Preparation (Eastern States) p. 178.

Similarly, a pharmaceutical house has supplied us with a Special Catarrhal Vaccine Concentrate for bacterial desensitization which contains the following:

Friedlander bacillus
Pneumococcus (seven types)
Micrococcus Catarrhalis
Streptococcus (hemolytic and non-hemolytic)
Staphylococcus albus
Staphylococcus aureus
Influenza bacillus (Pfeiffer)
Micrococcus tetragenous
(250 million each)

It is sold in 20 cc. vials as "Catarrhal Vaccine (Special) (Combined)." It contains 2000 million killed bacteria per cc. It can be made in dilutions of 1:20, 1:10, and 1:5 for testing as well as treatment purposes.

5. *Molds*

These may be obtained in 1 cc. vials of 5 per cent or 10 per cent glycerinated extracts; testing may be done in dilutions of 1:300 or 1:500 or milder.

Testing for mold sensitivity is indicated in patients who suffer from summer asthma when they do not give any reaction to pollen and in patients who live in old moldy homes or work in cellars and moldy environments.

Comment: One must be on guard, when testing patients for inhalants, foods, pollen, bacteria and molds, so as to avoid a constitutional reaction. First, use very mild doses, then gradually increase (on separate days) to stronger concentrations until satisfied; i.e., either to the presence or absence of any sensitivity.

VI. TWO SETS OF HYPODERMIC NEEDLES

It is necessary for the physician to have two sets of hypodermics and needles. They should be boiled each time before use.

1. One Set For Testing

One or two dozen tuberculin syringes; one or two dozen needles, 25 gauge, ½" in length for testing purposes only. They should be washed after each injection. The tuberculin syringe, i.e. plunger and barrel, are wrapped in pairs with a rubber band. The hypodermic needles should be kept separately in a brown, glass-stoppered bottle filled with alcohol. Patients under treatment with mild antigenic dilutions may be treated with the same set used for testing purposes.

2. Another Set For Treatment

One or two dozen Leuer glass syringes, 2 cc. each, and one or two dozen needles, 25 gauge, ½" in length. These hypodermics should be used for treatment only. Thoroughly wash after each injection. Plunger and barrel should be wrapped separated and together in pairs, and tied with a rubber band. Needles should be placed in a white glass-stoppered bottle covered with alcohol.

In spite of careful washings, however, the needles used for treatment purposes may retain concentrate antigens, such as pollen, dusts and animal inhalants. We advise a separate set of hypodermics and needles for the testing and treatment of patients with mild dilutions. Use another set to treat patients with strong concentrates. The above precautions are necessary in order to avoid constitutional reactions.

Comment: It is best not to make more than ten or twelve tests at any one sitting. An hour or two later another sitting of ten or twelve tests may be made, provided there are no suspicious large local reactions which may lead to a constitutional reaction.

In the presence of a positive history, tests for actual or suspected sensitivities, (foods, inhalants, pollen and so forth), must be carried out. The avoidance of reactions must be on the mind of the physician constantly because patients are afraid to return for further examination and treatment after having had a constitutional reaction. The physician should also consider his own responsibility, if in relieving the symptoms he should meet a patient who might give him a constitutional reaction.

VII. CHART

Foods

Allspice
Almonds
Apple
Apricot
Asparagus
Banana
Barley
Beef
Beet
Black Pepper
Buckwheat
Cabbage
Cantaloupe
Carp
Carrots
Cauliflower
Celery
Cheese
Cherry
Chicken
Cinnamon
Clam
Cocoa
Cocoanut
Codfish
Coffee
Corn
Cornstarch
Crab
Cucumber
Dates
Dill
Duck
Egg-plant
Egg White
Egg Yolk
Farina
Figs
Flounder
Halibut
Herring
Hops
Horseradish
Garlic
Gelatin
Ginger
Grape
Grapefruit
Honeydew
Lamb
Lemon
Lettuce
Lima Bean
Lobster
Mackerel
Milk
Mushrooms
Mustard
Oats
Olive
Onion
Orange
Oyster
Paprika
Parsley
Parsnip
Peach
Peanut
Pears
Peas
Pike
Pineapple
Plum
Pork
Potato, Sweet
Potato, White
Prunes
Radish
Raisin
Raspberry
Rhubarb
Rice
Rye
Salmon
Sardines
Seabass
Shad
Shrimp
Spinach
Strawberry
String Beans
Tapioca
Tea
Tomato
Trout
Tunafish
Turkey (meat)
Turnip
Vanilla
Veal
Walnut (English)
Watermelon
Wheat
Whitefish
Yeast

Inhalants

Camel Hair
Cat Hair
Cotton
Cottonseed
Chicken Feathers
Cow Hair
Dog Hair
Duck Feathers
Flaxseed
Glue
Goat Hair
Goose Feathers
Hair Mattress
Henna
Horse Dander
Indian Gum
Kapok
Orris Root
Pyrethrum
Rabbit Hair
Rayon
Sheep Wool
Silk
Tobacco

Spring or Tree Pollen

Beech
Birch
Black Walnut
Cottonwood
Elm
Maple
Oak
Poplar
Sycamore
White Ash
Willow

Early Summer Pollen

Bermuda Grass
Johnson Grass
June Grass
Orchard Grass
Red Top Grass
Rye Grass
Sweet Vernal Grass
Timothy Grass

Mid-Summer Pollen

Cockleburr
English Plantain
Marsh Elder

Fall Pollen

Artemesia
Ragweed Giant
Ragweed Short

House Dust

Autogenous
Stock

Bacteria	*Fungi*
Bacillus coli	Aspergillus flavus
Bacillus Friedlander	Aspergillus fumagatus
Bacillus influenza (Pfeiffer)	Aspergillus nidulans
Bacillus pertussis	Aspergillus niger
Micrococcus catarrhalis	Cladosporium fulvum
Micrococcus tetragenous	Helminthosporium
Pneumococcus (seven types)	Hormodendrum
Special catarrhal vaccine	Monilia albicans
Staphylococcus albus	Monilia sitophila
Staphylococcus aureus	Mucor circinello
Streptococcus hemol.	Mucor mucedo
Streptococcus non-hemol.	Penicillum digitatum
Autogenous vaccine	Penicillum expansum
	Rhizophus

CHAPTER FIVE

DIFFERENCES IN EVALUATION OF TESTING MATERIAL

I. *Multiple Positive Reactions on Testing*

II. *Food Elimination by Combined Skin and Food Testing*

III. *Gastro-Intestinal Fermentation*

The general practitioner, as well as the student in allergy, must realize that results first obtained in the case of testing, are simply a guide for further studies. They do not always express the final state of the patient's reactivity from a diagnostic point of view. Many doubt the value of testing, because they find that patients having clinical symptoms of sensitivity to foods when eaten but give a negative skin reaction on testing to the same foods. Other patients, who do not have any clinical manifestations when eating certain foods, do give a strongly positive skin reaction to these same foods on testing.

There may be many reasons for this. The most plausible explanation is that the prepared food testing material now available occasionally does not contain the responsible allergenic fractions. The responsible fraction can be not only the original protein, but any fraction thereof produced during digestion.

However, when the physician is sure of his testing materials, he has to draw a line somewhere and decide on some guiding methods. It is best to consider the negative and positive findings at their face value. *The exceptions to the rule are very few and he will be right* in approximately 95 per cent of his work. In doubtful cases, testing should be re-checked and caution used as in multiple sensitivities, which will be discussed presently.

I. MULTIPLE POSITIVE REACTIONS ON TESTING

It is often hard to demonstrate which of the multiple positive allergic reactions are responsible for the clinical symptoms from which the patient seeks relief. In many, a positive skin reaction may be only a potential factor. For instance, one may give a positive skin reaction to pollen from trees, grasses and ragweed. It is the usual method to treat this patient and desensitize him for only those pollens which check with the appearance of his clinical symptoms, coinciding with the dates of their pollination.

If this patient suffers from hay fever in the fall, he should be desensitized for ragweed only. The reactions, (small or large) to grass or tree pollen, are to be disregarded for the time being. No such definite check-up is possible when a patient is positive to many inhalants, foods, or to bacteria. It is advisable to instruct patients with positive skin reactions to multiple inhalants to abstain from contact with these inhalants. However, in the case of multiple food sensitivity, one cannot deprive a patient from a great number of important foods for any length of time.

The procedure we have adopted in the diagnosis for multiple food sensitivity differs greatly from the one advocated by Dr. Albert H. Rowe's Elimination and Substitution Diets. (23) Dr. Rowe has grouped certain foods which are *not based on testing.* He advises trying each group of foods for a week or two, until those are located which may be responsible for the clinical symptoms. This group must then be avoided. Our method, used since 1920, is primarily based on findings as a result of proper testing. It is briefly as follows:

II. FOOD ELIMINATION BY COMBINED SKIN AND FOOD TESTING

Eliminate all foods which give a doubtful and positive reaction. Place the patient on a negative diet, i.e., on foods which did not give positive reactions, until he has some freedom from his clinical symptoms. The doubtful foods should be tried first; then in rotation

the foods which give plus 1, or 2, or 3 reactions. Put the patient on the suspected food, raw or cooked, for three or four days, several times a day if possible. If no aggravation of the allergic symptoms takes place within that time, this food should be crossed off. The patient can eat it freely without restraint. If the allergic symptoms are aggravated, then the food should be placed in the forbidden column. An interval of three or four days must elapse before any other food can be eaten for testing purposes. This will give an opportunity for the patient to recognize any delayed reactions which may occur. In this manner all the doubtful and positive foods can be checked.

It can be readily understood that it takes a great deal of time and patience to establish a correct diagnosis when a patient shows many positive food reactions.

The following case will serve as illustration:

CASE NO. 13

S. K.: Male, white, thirteen years old, school-boy.

C. C.: Morning sneezing spells for five years. While they are perennial, they are worse during summer months, May to October. Occasional nasal obstruction and itching. Subject to winter colds, followed by wheezing and coughing. Dyspnea on exertion.

P. H.: Chronic otorrhea at the age of three, which improved after a tonsillectomy. Chicken Pox at six. Pertussis at seven. Measles at eight. No hives or eczema. Occasional pruritis in various parts of the body. Has been extremely ill at times with asthma and bronchitis. Had to miss school for weeks at a time.

F. H.: Maternal grandfather died from bronchial asthma which he had for ten years.

On examination, the boy was pale, undernourished, infected nose and throat. Wheezing and moist rales throughout the chest. Skin on arms had a roughness similar to ichthyosis.

He was tested for inhalants, foods, pollen, bacteria, and house dust. He was positive to lamb and pneumococcus, each

plus 4, horsedander, plus 3, cat hair, rabbit hair, veal, beef. Special catarrhal vaccine 1:10, each plus 2. Positive to goat hair, cow hair, dog hair, peas, beets, cheese, watermelon, egg yolk, milk, lima beans, house dust 1:100, tuna fish, each plus 1.

Treatment was instituted with:

1. Dust extract 1:200
2. A mixture of animal danders (a dilution of 1:20,000)
3. Special catarrhal vaccine (a dilution 1:10)

He was put on a negative diet, i.e., instructed to eat only those foods which gave a negative skin reaction. One month later, when he felt better, the foods to which he gave a positive reaction were tried in succession—one by one. Each food was given to him for three days straight — Monday, Tuesday and Wednesday — a little more than the usual portion. When there was no untoward reaction, i.e., asthmatic bronchitis and sneezing, that food was taken off the forbidden column. The balance of the week was allowed for any delayed food reactions.

One by one, all of the foods, although they had given positive skin reactions, were proven not to be responsible for any allergic syndrome, except milk, eggs, and tuna fish.

When milk was tried the patient broke out in a rash, sneezing spells, coughing and wheezing. We had to wait from seven to ten days before the symptoms, which followed milk, cleared up. Similar experience resulted when eggs or tuna fish were given. On the first day of their administration, there were enough symptoms to demonstrate they were real allergic factors. After three years of oral desensitization for milk, eggs and tuna fish, he is still unable to eat them, in the usual standard portion.

Incidentally, he is highly sensitive to dust, animal danders and bacterial proteins. He had to be trained to give himself injections two or three times a week. He only had to come to the office once a week, or once in two weeks, for adjustment of the dose.

After several years of desensitization, he was unable to be worked up to more than:

(a) 4 mm. of 1:100 dilution of house dust extract
(b) 4 mm. of 1:8000 dilution combined animal dander
(c) 1 mm. of special catarrhal vaccine

At present, the patient is clinically well and free from any allergic symptoms.

III. GASTRO-INTESTINAL FERMENTATION

We have many patients with bronchial asthma who on testing for food sensitivity, may or may not demonstrate positive reactions. However, these very same patients are always ill with some form of gastro-intestinal discomfort after eating. Most of the time it is associated with severe pain. The following are the predominating symptoms:

1. *Gastric Fermentation*

(a) Gastric distention while or immediately after eating
(b) A great deal of belching
(c) Sour and bitter eructations
(d) Choking sensation in the throat

All the above symptoms, singly or combined, are associated with or followed by attacks of bronchial asthma. The discomfort is usually out of proportion to the amount and kind of food the patient may eat.

2. *Intestinal Fermentation*

(a) Abdominal discomfort from one half to one hour after eating
(b) Attacks of diarrhea alternating with constipation
(c) Sometimes the stools are very hot, burning the rectum
(d) Recurring attacks of rectal pruritis

While it usually occurs in individuals who demonstrate some positive allergic reactions to food, it is also met with in patients who do not have any reactions to suspected foods. Their blood sugars are within normal limits and they do not show any high blood cholesterol. However, they are unable to digest sugars and fats. There must be some deficiency in the pancreatic and liver function which may be

responsible for this syndrome. They are usually benefited a great deal when placed on a high protein, fat free and low carbohydrate diet, as illustrated by the following case:

CASE NO. 14

H. G.: Male, thirty-nine, business man, two children (fourteen and ten), both well.

C. C.: Bronchial asthma at irregular intervals, of twenty years' duration. It began in September or October, 1926, with an attack of sneezing and wheezing.

H. P. I.: For the last eight years he has had very little sneezing, no nasal obstruction, but a great deal of nasal discharge, accompanied by a cough. He has an annoyance in his upper stomach which he describes in the following manner: "A substernal raw feeling, occasionally it is a hungry feeling but it is worse after eating. Fullness in the stomach and bowels, accompanied by explosive belching and eructations with a sour taste in the mouth." Many kinds of food may produce wheezing; i.e., sugars, candy, apples, oranges or fruit juices. Stomach is always distended after meals, no matter what he eats. It begins right after the meal and usually lasts two to three hours. Invariably this distention brings on attacks of asthma four or five times a week.

He was in the Engineering Corps, in the second World War for six months from March to September, 1944. Had an attack of sore throat and bronchitis. Was confined to an Army base hospital for six days in April, 1944. Was well until August when he worked in water and was lying in damp clothes for three days, after which he had the most terrific attacks of asthma. Was in an Army hospital for three weeks and discharged, free from asthma. Since then he has been having irregular attacks several times a week, day or night.

P. H.: Pertussis in boyhood so violently it produced a squint. Pneumonia at five, measles at six and chicken pox at twenty-seven. Was always subject to infection of nose and throat. He has no loss of taste or smell.

F. H.: Grandfather on mother's side had asthma. Mother always had digestive trouble; i.e., colitis and gall bladder attacks.

On examination he had a great deal of moisture and bronchitis in his chest and extremely inflamed naso-pharynx. His urine and blood chemistry was within normal limits, including his blood cholesterol and blood sugar.

He was tested for inhalants, food, bacteria, house dust and molds. Was positive to:

Spinach ....plus 1
Camel Hair ....plus
Stock Dust ....plus
Streptococcus ....plus
Micrococcus tetragenous ....plus
Pneumococcus ....plus
Friedlander bacillus ....plus
Penicillium ....plus
Rhizophus (molds) ....plus
Lima Beans ....plus
Tomato ....plus

Patient was asked to abstain from positive and doubtful foods. However, his gastro-intestinal distention was very extreme. It invariably followed a meal, regardless of amount or kind of food. *He was put on a fat free and low carbohydrate diet.* Was instructed to avoid all condiments, anything fried, anything sour, any fruit juices on empty stomach. The following Rx *was of great benefit to him:*

Anasthisin
Cereum Oxolate ....aa gr. 1
Cocain Hcl. ....gr. 1/12
Ephedrin Sulfate
Phenobarbital Sodium
Codein Sulfate ....aa gr. 1/6
Capsule #1
One capsule four times a day after meals.

The slightest discrepancy in his diet very easily put him out of balance

and bring on gastro-intestinal fermentation, distention and attacks of asthma.

The following is a summary of his laboratory tests:

Repeated urinary examinations, blood count and differential were within normal limits.

Blood Sugar — 75.4 mgm per 100 cc.. of blood.
Blood Cholesterol — 222 mgm per 100 cc. of blood.
Fractional Gastric Analysis:

	Free HCL	*Total Acid*	*Lacid Acid*
Fasting	27.4	39.8	negative
I	17	28.2	"
II	26.9	28.6	"
III	25	26.5	"
IV	negative (bile stained)	19	"

Occult blood—negative in all specimens with the exception of the fourth which showed a very faint trace.

Starch—present in all specimens with the exception of the fasting contents.

Microscopically the usual findings were encountered such as starch granules, mucous shreds, occasional leucocyte, occasional red bloodcell, few epithelial cells, bacteria, and so forth.

Biliary Drainage:
Microscopically many pus cells, some duodenal cells, many epithelial cells, many mucous shreds, bile pigment, very occasional red blood cell, many bacteria. Occasional cholesterin crystal.
Occult blood—very faint trace.

Stool Examination:
Color—dark brown.
Consistency—solid.
Odor—normal
Occult blood—negative.
Reaction—faintly alkaline.
No blood or mucous seen with naked eye.
Parasites, ova, amoeba—none seen.
Fat—positive.
Starch—positive.
Gram's Stain—negative (80 per cent). Organisms predominate.

This case illustrates the point that despite removal of positive reacting foods (on testing), functional gastro-intestinal disturbances and abnormal digestive action due to some perversion or deficiencies in enzymes, may contribute in some instances to asthmatic attacks.

Comment: On a high protein, fat free and low carbohydrate diet and the above mentioned Rx, he was perfectly free from gastro-intestinal discomfort and recurring attacks of bronchial asthma.

FEAR OF CONSTITUTIONAL REACTIONS

I. Excessive Doses
II. Changing Bottles or Dilutions
III. Interval Between Injections

Constitutional reactions may occur in the course of protein skin testing and in the treatment with any allergen. It is especially prevalent in hayfever and pollen asthmatics.

Some of them give very strong positive reactions to as mild a dilution as 1:50,000 to 1:100,000, or even as mild as 1:150,000 to 1:200,000.

I. *EXCESSIVE DOSES*

Pollen asthmatics, who have severe clinical symptoms during their respective pollen season, are apt to be subject to constitutional reactions when the doses are not sufficiently mild at the beginning of treatment.

Any attempt at desensitization by the general practitioner is usually a failure because of the frequent occurrence of severe constitutional reactions to the doses used and consequently to any increase of the doses of pollen extract.

II. *CHANGING BOTTLES OR DILUTIONS*

Constitutional reactions may follow when changing from a weaker to a stronger dilution; when using fresh dilutions to supplement the old (which may have deteriorated on standing) in order to continue the desensitization.

III. INTERVAL BETWEEN INJECTIONS

The customary interval of a week, or ten days, between injections may be responsible for the constitutional reactions. When the same dose is used every day, or every other day, no constitutional reaction will take place.

Unfortunately for the patient, after several years of pre-seasonal, or all year round unsuccessful attempts to relieve the condition, the general practitioner and the patient give it up as a bad job. With treatment discontinued, they usually become perennial asthmatics and finally—chronic invalids. (19) These patients tax the skill and experience of expert allergists as to the proper adjustment of the dose and frequency of its administration. It takes from two to three years of injections, (administered two or three times a week, or even daily), throughout the year before some patients are able to stand stronger pollen dilutions. This will be discussed under pollen treatment.*

The following cases may serve as illustrations:

CASE NO. 15

W. C.: Male, fourteen years. Called at office Sept. 23, 1945.

C. C.: Fall hay fever and asthma of three years' duration. Beginning May, 1943, he had had injections once a week for ten weeks. Had a constitutional reaction after the tenth injection. The injections were discontinued. There was no improvement in the fall of 1944. Injections were resumed in May, 1945. In June of the same year, he began to suffer with severe hay fever and asthma symptoms. This condition has been almost continuous until the last week in September, 1945.

The family doctor continued with injections, despite the appearance of constitutional reactions which began in June. When the patient first called at the office he was very ill with severe asthma and bronchitis, a condition he had had for the last three months. Apparently neither the doctor nor the parents were

*p. 98.

aware of the fact that the early start of the fall hay fever and asthma symptoms was due to the overdose of the ragweed pollen injections.

CASE NO. 16

S. C.: Male, five years. Called at office October, 1945.

C. C.: Fall hay fever and asthma for the last three seasons. It began in August, 1943. In May, 1944, the family doctor undertook fall hay fever injections, once a week. Several hours after the third injection, the boy had a constitutional reaction, i.e., an attack of hay fever, asthma, and hives. It required several injections of epinephrin to relieve him, and he was confined to bed for several days. Treatment was resumed when he recovered. Three weeks later, he had a second constitutional reaction, one half hour after an injection. It was necessary to use epinephrin several times to relieve him and he was confined to bed for one week.

The boy's parents had him discontinue treatments on account of the constitutional reactions. They took him to New Hampshire for the six week period of the fall hay fever season. In 1945, due to the previous unpleasant experiences with injections, they intended to take him to New Hampshire again for the fall hay fever season but their plans did not materialize He was very ill with hay fever and asthma throughout September. When they called at the office, the first week in October, he had severe asthma and bronchitis, evidently a continuation of the current fall hay fever season. The parents were informed that with the slow method of desensitization they did not have to fear the occurrence of constitutional reactions. They were further assured that it was safe to resume pollen desensitization.

CASE NO. 17

K. W.: Male, six years. Called at the office Sept., 1940.

C. C.: Fall hay fever and asthma for the last three hay fever seasons. When it began in the fall of 1938, the boy was sick for

three weeks. In the summer of 1939, he was getting injections once a week from a local doctor. This made him worse and injections had to be discontinued. He was very sick in the fall of 1939; epinephrin was used to relieve him on several occasions. The parents were afraid of repeating injection treatments in the summer of 1940. In August, 1940, he began to suffer with severe hay fever which was followed by asthma in September.

P. H.: No childhood diseases, no asthma in family. Three older sisters, ages ten, fourteen and seventeen years, perfectly well.

H. P. I.: He called the last week in September and in spite of the very low pollen count, he still had very severe asthma and bronchitis. Injections of epinephrin had to be given. On testing, he was positive to 1 mm. of 25,000 dilutions of mixed ragweed, plus 4. He was not positive to dust or to any bacterial proteins.

Outline of Treatment: 1 mm. mixed ragweed 1:50,000 dilution was given to the boy daily. Gradually and slowly increased as outlined in chapter on Pollen Seasonal Desensitization.* He received the following Rx.:

Ephedrin sulphate
Phenobarbital sodium
Codein sulphate ....each grs. 1/12
Atropin sulphate ....grs. 1/400

This was made into one capsule, taken three times daily.

In ten days the boy was free from his hay fever and asthma symptoms. He received three or four injections a week throughout the year. By August, 1941, he was worked up to 5 mm. of 1 per cent ragweed pollen extract. This dose was maintained throughout the year of 1942, i.e., 4 or 5 mm. of 1 per cent ragweed mixture once a week. In July, 1942, it was increased to 8 or 10 mm. of 1 per cent mixed ragweed extract once a week. The year of 1943, 8 or 10 mm. was continued once in ten days or two weeks. In 1945 the same dose was continued once

*See p. 113.

in two or three weeks. After the fall of 1945, the boy having been free from asthma and hay fever symptoms for five consecutive seasons, the parents were advised to discontinue further treatments.

Comment: The above mentioned three cases illustrate the fear of the general practitioner, as well as the public, of the occurrence of constitutional reactions, the result of improper regulation and improper dosage. Under these circumstances, patients as well as the doctor give up further attempts at treatment and cure of the patients. Under proper adjustments of the doses, viz. very mild dilutions, given more often, 3 or 4 times a week for months, and gradually and slowly increased, year by year, the results are perfect in 95 per cent of the patients. We advise patients to discontinue treatment if they are free from any allergic symptoms after 4 or 5 years of treatment. 1 out of 5 or 1 out of 8 may return after several years with a recurrence of mild symptoms; 1 out of 15 — with a recurrence of severe allergic symptoms as if he had never had any treatment.

CHAPTER SEVEN

THE LONG DISPUTED VALUE OF BACTERIAL PROTEIN TESTS

I. Positive Bacterial Allergy
II. Common Colds
III. Infectious or Epidemic Colds

I. POSITIVE BACTERIAL ALLERGY

The customary whealing with erythema and pseudopod formation is the accepted standard allergic skin reaction. When it follows bacterial protein tests, it is not considered by everybody to be a positive etiologic allergic factor.

Many immunologists and allergists inject the bacterial proteins subcutaneously. The local reactions are read in twenty-four to forty-eight hours. The presence of a local redness and swelling is a positive bacterial allergic reaction. While it may not be universally accepted, nevertheless for the past twenty years, we have considered only the *immediate* whealing to bacterial proteins as a positive etiologic factor.* When the local swelling takes place within twenty-four to forty-eight hours, we consider it a *delayed positive reaction.* The immediate positive reaction is obtained on intradermal testing, with single strains of various bacterial proteins of the respiratory system to 1 mm. of a dilution containing 2,000 million bacteria per cc. (24)

However, there are two exceptions:
The Staphylococcus Group
The Streptococcus Group

*See figs 6-10, Positive Bacterial Tests.

The staphylococcus group are universal reactors. It has been our experience that everybody is positive on testing to either single, or combined strains of the staphylococcus group, (similar to the opium, codein, and histamine dilutions which are universal reactors on intradermal testing).

Therefore it is impossible to conclude that this staphylococcus group is the only etiologic factor in a respiratory allergic disease.

The other exception is the streptococcus group. It seldom produces an immediate positive reaction on intradermal testing. It usually produces delayed reaction within twelve to forty-eight hours.

II. COMMON COLDS

The so-called common cold is not due to any *one* etiologic factor. It is a combination of clinical symptoms resulting from *many causes.*

No one form of treatment or vaccine will be of any value, unless the causes are specifically studied and removed. That is why there is universal disappointment in the management and treatment of the so-called "chronic common cold."

Many years ago we made an individual study of over two hundred adult patients, who complained of frequent colds and recorded the following:

Deviated septum	5 per cent
Obstructing nasal polyps—unilateral and bilateral	6 per cent
Allergic rhinitis (pollinosis and demonstrable perennial allergic factors)	30 per cent
Large infected tonsils	14 per cent
Vasomotor paralysis characterized by swollen, pale turbinates with no positive allergenic factors	9 per cent
Malingerers (patients coming for notes after symptoms subsided for working purposes)	10 per cent
No positive etiologic factors except bacterial sensitivity	26 per cent

The first four groups obviously require medical and surgical correction before evaluating the effect of vaccine.

The use of stock vaccines in chronic common colds, especially complicating allergic diseases, are of no value by themselves. When used by themselves, there is no therapeutic value in the use of autogenous vaccines, whether the autogenous vaccines are made from cultures obtained from smears of the nose, throat and sputum, or when made from the bronchoscopic aspirations. We have records of over one thousand patients, and the results of their cultures are as follows:

Staphylococcus (albus) and streptococcus (non hemolyticus predominating)	85 per cent
Hemolyticus streptococcus—predominating	2 per cent
Colon bacillus—predominating	5 per cent
Micrococcus catarrhalis—predominating	5 per cent
Pneumococcus—predominating	2 per cent
Micrococcus tetragenous—predominating	2 per cent

We believe, only those vaccines, (stock or autogenous), which give a positive reaction on intradermal testing (a local wheal and pseudopods) are to be used. The best time to make vaccines is the first twenty-four to forty-eight hours in the acute illness, instead of weeks after the acute condition has subsided. The time and frequency of the injections should be used in the case of pollen for hay fever.*

Twenty of twenty-six clinic patients gave positive skin reactions to bacterial proteins and did not react to house dust. They were placed in two groups of ten each to test the synergistic effects of bacterial and dust treatments.

Group A was placed on bacterial vaccine treatment with dilutions beginning with 1·100, from 3 to 15 mm. Then with dilutions of 1:10 from 3 to 15 mm. Then the concentrated extract, from 5 to 8 mm.

Group B was placed for four months on house dust extract, with dilutions the same as those used in the bacterial treatment, namely, 1:100 — 1:10 dilutions and the concentrated house dust from 3 to 5 mm. (24)

Both received mild local nose and throat treatment.

Each group had approximately 40 per cent improvement. Colds

*See chapter on Pollen Desensitization, p. 98.

were less frequent and the duration was cut from six to seven days, down to two to three days.

The groups were then reversed in their treatment. Group A was placed on house dust extract for another four months. Group B was placed on bacterial vaccine treatment for another four months. There was again a similar reduction in the frequency and duration of the colds. Eight months later, all the twenty patients were placed on both bacterial vaccine and house dust treatment. The results were remarkably good. The following year, sixteen out of the twenty patients had one or two mild colds, which did not interfere with their occupations. It was apparent that there is a synergistic effect for the good when bacterial vaccines and house dust treatment are used at the same time in patients who suffer from chronic common colds.

Among the group of twenty patients, four gave as history that for years they had been subject to rheumatic attacks several times during the winter. They were "laid up" with severe muscular and joint pains for two or three weeks at a time. After one year of treatment for their chronic common colds, they volunteered the information that they did not have any more so-called 'rheumatism spells.' They were perfectly free from muscular and joint pains while they were under treatment. The same holds true for patients who were under treatment for bronchitis and bronchial asthma. Eight patients gave as history of having had muscular and joint pains associated with head and back pains for from twelve to fifteen years' duration. Their so-called "rheumatism" was continuously alternating with recurrent attacks of bronchial asthma. In other words, when they had attacks of bronchial asthma, they were free from the so called "rheumatism" pains, and vice versa. After being treated for ten or twelve months (with bacterial vaccine and house dust extract) primarily for their bronchial asthma, they volunteered the information that they were free from the so-called recurrent attacks of "rheumatism." It was evident that the bacterial allergy, which was responsible for the attacks of bronchial asthma, was at the same time responsible for the recurring muscular and joint pains. Both clinical syndromes improved from the same course of treatment with bacterial and house dust desensitization.

The following may serve as an illustration:

CASE NO. 18

L. L. B.: Female, sixty-five years, married.

C. C.: Nasal obstruction and sneezing spells, sore throat off and on for the last ten years. One week previously, on arising in the morning, she noticed a discoloration of the anterior and posterior surfaces of the skin of right upper arm, extending from shoulder to wrist. The ecchymosis began with pain in the axilla. Pain persisted after disappearance of ecchymosis.

P. H.: Subject to colds in the nose and throat for twenty-five years. Subject to attacks of hives and angioneurotic edema of the lips. General muscle pains, and pain in joints of the hand, shoulder, elbow, and wrists, for ten years off and on. Sciatica for fifteen years off and on. Contracted scarlet fever at the age of fifty-eight, while nursing grandchild with the disease.

Examination: Upon examination, she had congested pharynx and tonsils. She showed hypertrophic and deformed phalangeal joints, and a great deal of friction on motion in shoulder and knee joints.

Treatment: Patient was treated with various analgesics, (salicylates, aspirin-phenacetin groups, and the like) with no response. Had several injections of fibrolysin (Merck) which were discontinued because of extreme vomiting and diarrheal reactions. When the above mentioned medication failed, it was suggested that the patient be treated with bacterial proteins and house dust extract as a possible foreign protein absorbent.

Discussion: As per accompanying chart,* the patient was started with small doses of above named antigens, twice a week, and in the course of five or six months, we had gradually worked her up to a dose of 10 mm. of each antigen. Occasionally, she missed a week or ten days.

It is interesting to note that the patient's rheumatic pains have gradually disappeared. In spite of the large doses of the antigens

which the patient now receives, she no longer shows any local reaction—although in the beginning she showed marked local reactions, even to mild dilutions. For the last several weeks, the patient has admitted that she has made a marked improvement. Not only has the pain disappeared, but the ankylosed joints are more moveable. She is no longer affected by changes in the weather. However, treatment was continued for two years longer.

Comment: It would not be fair for the physician or the student in allergy to be carried away by the results from our experiences. It is not by any means a cure-all for all forms of rheumatism and arthritis deformans. However, in patients who are subject to frequent colds, *the infection responsible for the latter may act as a bacterial allergy; it may possibly be responsible for the associated complication of* muscular and joint pains. This particular type of infection in patients is greatly benefited by bacterial and dust desensitization.

HOUSE DUST AND BACTERIAL VACCINE CHART

Special Date	Catarrhal Vaccine (Concentrate)	Concentrate Pooled Vaccine	Stock House Dust (1:10)
6-5-41	¼ mm.	¼ mm.	1 mm.
6-7-41	½ mm.	½ mm.	2 mm.
6-10-41	¾ mm.	¾ mm.	3 mm.
6-12-41	1 mm.	1 mm.	3 mm.
6-14-41	1½ mm.	1½ mm.	4 mm.
6-17-41	2 mm.	2 mm.	5 mm.
6-19-41	2 mm.	2 mm.	5 mm.
6-21-41	2½ mm.	2½ mm.	6 mm.
6-27-41	3 mm.	3 mm.	7 mm.
7-1-41	3 mm.	3 mm.	7 mm.
7-15-41	4 mm.	4 mm.	9 mm.
			Concen.
7-19-41	4 mm.	4 mm.	1 mm.
7-22-41	4 mm.	4 mm.	1 mm.
7-29-41	5 mm.	4 mm.	1 mm.

8-1-41	5 mm.	5 mm.	2 mm.
8-9-41	6 mm.	6 mm.	3 mm.
8-13-41	7 mm.	7 mm.	4 mm.
8-18-41	8 mm.	8 mm.	5 mm.
8-21-41	8 mm.	8 mm.	5 mm.
8-27-41	9 mm.	9 mm.	6 mm.
8-30-41	9 mm.	9 mm.	7 mm.
9-2-41	10 mm.	9 mm.	7 mm.
9-8-41	10 mm.	9 mm.	7 mm.
9-12-41	10 mm.	10 mm.	7 mm.
9-15-41	10 mm.	10 mm.	8 mm.
9-30-41	7 mm.	7 mm.	5 mm.
10-2-41	8 mm.	8 mm.	6 mm.
10-8-41	8 mm.	9 mm.	7 mm.
10-10-41	8 mm.	9 mm.	8 mm.

III. INFECTIOUS OR EPIDEMIC COLDS

These have many synonyms, the commonest are·

1. Grippe
2. Cold
3. Influenza
4. "Flu"
5. Pharyngitis
6. Tonsillitis

They are all descriptive of various pathologic states of the same acute infection. It occurs in one section after another in any city—usually sweeping through the neighborhood for several weeks, only to recur in other sections of the same town in rotation. The infectious nature is usually demonstrated by its spread from person to person in any household. It is not unusual for all members of the same family to be simultaneously "laid up" in bed with fever, coughing, and the like. These infectious or epidemic colds are responsible for the severe complications in respiratory allergy. They frequently initiate uncontrollable and prolonged attacks of bronchial asthma, i.e., status asthmaticus, in 40 per cent of the bronchial asthmatics.

These neighborhood epidemics, familiar to every practicing physician, follow any change in the weather. They have a tendency to

recur in patients with a certain regularity. In some, it will be every November or December—*in others, it will always be in April or May.* Fortunately, however, —

1. 60 per cent of these asthmatics respond to specific desensitization treatment, and many other supportive measures. If properly *planned and carried out, they usually do not have any recurrent attacks;*

2. 30 per cent of them, in spite of the indicated treatments properly carried out, have recurrent attacks but of shorter duration and are easier to control;

3. 10 per cent do not respond to any preventative form of treatment. They have recurrent attacks of status asthmaticus and have to be hospitalized *for weeks at a time. The treatment and prevention of* asthmatic bronchitis and status asthmaticus in the latter two groups *depends upon the solution in the future of the epidemiology of* infectious influenza. For the present, the sulfa group and penicillin are the only measures at our command in acute cases.

The morbidity and mortality of these patients is usually due in part to the state of sensitivity to drugs and foods used in their acute illness. *When admitted as an emergency patient to a hospital, it is* important for each of these patients to give their attending physician a list of *drugs and foods* to which they are sensitive.

CHAPTER EIGHT

THE DIFFICULTY OF DIFFERENTIATING THE ASSOCIATED COMPLICATIONS OF BRONCHIAL ASTHMA

I. *Severe and Multiple States of Sensitivities*

II. *Complications Resulting From Bacterial Infection and Bacterial Allergy*

III. *Status Asthmaticus, A Complete Loss of Cellular and Humoral Physiologic Response*

IV. *The Destruction of the Mucous Membranes of the Respiratory System*

The simple allergenic factors, per se, are not destructive to the cellular structures involved, or to the so-called shock tissue. Sensitivity usually produces a reaction, disturbing the normal balancing power of the tissue, distorting their physiologic function as long as it is in contact with the allergen. Just as soon as the allergic factor is removed, the normal physiologic function is immediately restored.

For illustration: The patient who suffers from uncomplicated fall pollinosis is well twelve to twenty-four hours after the first frost, which usually destroys the pollen in the atmosphere. In a similar way, patients who suffer from various inhalants, such as cats and dogs, are restored to complete health in several weeks, when dis-associated from the offending animals.

Take for instance the following case:

A physician called at the office, in 1921. He had suffered from bronchial asthma from childhood. Was constantly ill with attacks and could not practice medicine. Upon examination, he was found

positive to dog and cat hair and some food proteins. As soon as the animals were removed from his environment, he was free from attacks within two weeks. Four weeks later, he was well enough to take care of his patients. He had no recurrences of bronchial asthma and has practiced medicine since then. (26)

On the other hand, if the patients who suffer from pollen sensitivity or any other allergen (seasonal or perennial), have primary or complicating bacterial infections directly or indirectly responsible for their allergic syndromes, no immediate improvement is likely to occur. In 60 per cent of them we can

1. Build up a resistance against infection by various means at our disposal.

2. Remove the foci of infection, or

3. Desensitize them for the presence of the bacterial allergy.

In 40 per cent of them it is impossible to remove the damage done by bacterial infections and, therefore, impossible to accomplish good results.

This is possibly due to the following:

(a) It is impossible in every instance to prevent recurrent attacks of bacterial infection.

(b) It is impossible in every instance to locate the focus of infection which may act as a source for bacterial allergy. While the apparent focus of infection may be in the upper respiratory system, it also may be lodged in the gall bladder, appendix and other parts of the body.

(c) It is not always possible to restore a destroyed mucous membrane of the upper respiratory system if there has been long standing bacterial invasion.

(d) It is impossible to remove the fibro connective tissue (scar tissue) formed in the mucous membranes secondary to various forms of infection.

(e) The fibro connective tissue (scar tissue) formed in the basement lining of the mucous membranes, we think, is responsible in many of these patients suffering under changes of weather.

The important contributing factors which may produce severe complications resulting from bacterial infections and occasionally an irreversible type of bronchial asthma or the so-called intrinsic asthma are as follows: (26A) (26B)

I. SEVERE AND MULTIPLE STATES OF SENSITIVITIES.

A. Patients with multiple sensitivities, with shock tissue in many organs.

B. Patients with an extremely high degree of sensitivity, no matter what shock tissue is involved.

C. Patients who have frequently recurring and prolonged attacks of asthma due to any cause.

II. COMPLICATIONS RESULTING FROM BACTERIAL INFECTION AND BACTERIAL ALLERGY

The allergic individual at best has very poor recuperative powers. His cellular mechanism does not balance easily, once the normal state has been disturbed. A complicating bacterial invasion may take the form of bacterial allergy as well as inflammation with all its sequels, viz.:

A. Longstanding, recurrent attacks due to one or many allergens followed by bacterial infection.

B. An acute fulminating bacterial infection of the respiratory system, in a potentially allergic individual, who prior to the infection was free from clinical allergic symptoms.

III. STATUS ASTHMATICUS. A COMPLETE LOSS OF CELLULAR AND HUMORAL PHYSIOLOGIC RESPONSE

Status asthmaticus is an acute asthmatic state in an individual who has been subject previously to attacks of bronchial asthma. When the cellular and humoral protective mechanism is out of balance, whatever the cause, a complete shock is taking place. There is a loss of the physiologic and immunologic behavior of the body functions with regard to the respiratory, vascular and nervous systems. Pulse,

from 120 to 150. Fever may be present. Constant dyspnea, wheezing and coughing. Precordial and general chest pains. There is a great deal of anxiety, apprehensiveness and extreme fear on the part of the patient. Status asthmaticus may last from several days to several weeks. *In this state, the asthmatic does not respond, or poorly responds to drugs or any therapeutic measure for relief.*

IV. THE DESTRUCTION OF THE MUCOUS MEMBRANES OF THE RESPIRATORY SYSTEM

Inflammatory processes in the respiratory mucous membrane may *cause:*

1. A hypertrophic state, i.e., nasal polyps, hypertrophic rhinitis, purulent asthmatic bronchitis, with the ever present moist rales.
2. Destruction of the lumen of smaller bronchi with formation of pus pockets, bronchiectasis, asthmatic bronchitis. (27) (28)
3. An atrophic state, i.e., atrophic rhinitis, loss of taste and smell, granular pharyngitis, dry wheezy chest.

A similar picture could be drawn from a study of skin conditions, originally of an allergic nature, complicated by infection. *It is these chronic allergics who make the rounds from doctor to doctor and hospital to clinic with very little benefit. These patients must have guidance in preventive measures. It is imperative at the time of* acute infections that they have accurate diagnosis, expert treatment, and adequate convalescence. All effort must be made to prevent tissue destruction so that the normal physiology is preserved. With our present and ever increasing knowledge of sulfonamides, penicillin, (29) (30) and other specifics in the treatment of infectious diseases, it is possible that in the future we will not have as many complicated and irreversible states of bronchial asthma.

The following cases may serve as illustrations:

CASE NO. 19

Male patient with perennial asthmatic bronchitis *of twenty* years' duration.* *Age sixty-nine years. At forty-nine, he had*

*See Fig. 11, Author's case, published in *Diseases of the Chest*, Vol. 8, July 8, 1942.

a severe influenza-pneumonia. Since then, he has had attacks of summer asthma. One year later, it was complicated by bronchitis with a purulent expectoration. For the last few years his condition had become perennial. On testing, he was found positive to orchard, timothy, June, and plantain grasses, each plus 2; various aspergeli, penicillum, mucor, monilia, each plus 3; dust and various bacteria of the respiratory system, each plus 2. Under treatment for six years. Responds poorly to treatment. However he was not helpless and was able to care for himself, coming to the office for treatment.

CASE NO. 20

L. R.: Male, twenty-nine years, single, office worker. Called at office May 8, 1944.

C. C.: Bronchial asthma since the age of five years. For the last eight years, in the spring and fall of the year, i.e., during the rainy and unsettled weather in April and October, he has been at his worst. Coughs and expectorates a white, green, and yellow material, worse upon arising in the mornings. Has constant wheezing and dyspnea, which is worse on exertion.

P. H.: He was always a well boy, living in the country on a farm. Had no childhood diseases until the age of five years, when he contracted a very serious cold. This was followed by severe bronchial pneumonia and a high fever for several weeks. Since then, he had begun to be subject to colds and coughing spells. He also began to have at that time constant attacks of bronchial asthma. Has alternating nasal obstructions, constant rhinitis, but no sneezing. He was treated for years by many doctors, also in State Tuberculosis Dispensaries and various sanatoriums, as a case of chronic tuberculosis, although he never had a positive sputum. When he called at the office, he brought an X-ray report from a Tuberculosis Clinic, stating that his chest revealed "suspected reinfection type (adult type) tuberculosis, most marked at level of left second interspace anteriorly."

Examination revealed a red, swollen nasal mucosa, purulent

and granular pharyngitis—temperature 98—pulse 95 and 100. Chest showed a great deal of moist rales and wheezing throughout. For the last seven years, since living in the city, he had felt much better, gaining a little weight; is able to work, although having constant attacks of bronchial asthma, but they are not as severe as they were while living on the farm.

F. H.: There is no family allergy and no other personal allergy.

This patient was tested for inhalants, food, bacteria, molds, pollen and house dust. He was positive to:

1. Cow hair, horse dander, doghair, rabbit and goat hair, each plus 2.

2. Kapok and cat hair, each plus 1.

3. Dust extract and various bacteria of the respiratory system, each plus 2.

Comment.

1. This patient, potentially sensitive to inhalants, was well until the age of five years, when he contracted a severe bronchopneumonia.

2. Before the infection, he was only potentially positive to animal inhalants; after the infection had disturbed the protective mechanism, the animal inhalants began to be responsible for the active clinical symptoms of bronchial asthma.

3. While in constant contact with the animals on the farm, his condition was much worse than after the time he moved to the city. In the city, therefore, in the absence of the animal inhalants to which he was positive, he experienced a definite improvement in the frequency and severity of the attacks of bronchial asthma. He gained weight and was able to do some work to support himself.

However, the severe infection of the bronchial system had destroyed the recuperating powers of the mucous membrane. The asthmatic bronchitis did not respond to any form of treatment employed for the last ten years.

The following plan of treatment was outlined:

1. A mixture of the animal inhalants (epidermals), treatment to start with dilution of 1:10,000.

2. A mixture of all the bacteria of the respiratory system to which he was positive with dilutions of 1:20.

3. House dust extract from his own environment (home and factory) with dilutions of 1:200.

4. Sulfa drug treatment was used as follows:

(a) Sulfanilamide tablets were given, four a day, for two weeks.

(b) After a week's interval, four sulfathiazole tablets a day were given for four weeks.

(c) After another week interval, sulfadiazine tablets, four a day, were given for four weeks.

After one month of freedom from any medication, the above sulfa treatments were repeated There was some improvement. He was still subject to colds and rhinitis attacks and occasional wheezing.

In April, a course of penicillin—100,000 units per day for ten days up to 1,000,000 units was given. It did not prevent him from getting his customary recurrence of his upper respiratory infection at the end of April, with a temperature of 101 and 102—pulse 110-120. He was in bed five days before he recovered.

Summary: Irreversible infection of the upper respiratory system since the age of five years. The patient feels greatly improved in his condition from the sulfa and penicillin drugs. (30) Several weeks passed without an attack of bronchial asthma. Occasionally he has some wheezing and coughing, which does not interfere with his daily work. The cellular structures of the bronchial and pharyngeal system have not completely recovered to normal.

CASE NO. 21

E. B.: Female, fifty-seven years old. Called at the office December, 1942.

C. C.: Asthma and wheezing, fifteen years' duration.

P. H.: *Coughing,* dyspnea, hoarseness, since childhood. Cough always dry, with very little expectoration. Dyspnea is worse on exertion, even walking against the wind. Spasms of coughing may take place after prolonged conversations. The attacks are worse in winter, *in the spring and fall of the year* or during changes of weather any time of the year. Feels better in the summer or in hot climates. Spent several winter months *in Florida* where she was perfectly well. Since adolescence was always subject to frequent colds, with or without fever, accompanied by aches and pains all over her body. Was doctoring all her lifetime in Europe, as well as the last twenty years since coming to the United States, always with an optimistic outlook and thankful for any comfort or relief obtained. Had *various* allergy studies made and several bronchoscopic treatments with *no relief for the dyspnea and wheezing. Was diagnosed by some* as a psycho-neurotic personality.

On account of the constant coughing, she could always be singled out when she entered the office. She always responded to sedatives but they were not used for any length of time for fear of habit-forming. The last two years echimotic spots appeared irregularly on her arms and legs. She was positive she had not struck her body against anything. Vitamin K in large doses seemed to have very good effect but the spots always reappeared again.

On repeated physical *examination her chest was clear, no* moisture, no wheezing, no rales of any account. Her dyspnea was predominantly inspiratory, although at times she had both inspiratory and expiratory dyspnea.

Upon inspection, her pharynx was always red, swollen, raw beef variety.

Was tested for inhalants, food, bacteria, house dust and molds. She gave a *slight positive reaction to house dust* and to various bacteria of the respiratory system. She was positive *to* several drugs, especially iodides.

The patient was treated with house dust extract and autogenous vaccine and various bacteria of the respiratory system, with variable improvement. She had a course of sulfa drug treatments in the following manner:

She was taking sulfanilamide, four times a day for thirty tablets; stopped for two or three days. Sulfathiazol, four tablets a day until she had taken thirty; stopped for three days. Sulfadiazine, four tablets a day for thirty tablets. The sulfa drug treatment was increased to a high sulfa blood level but there was no distinct improvement. Local treatment to her throat improved, but did not cure, her constant hacking cough.

It was decided to place her in the hospital for a course of penicillin treatment. It was started with 10,000 units intramuscular every three hours and after the third injection, when no reaction occurred (no dermatitis, no pruritis) it was increased to 25,000 units every three hours. After twenty-four hours, when there were no signs of contra-indications, penicillin was stepped up to 50,000 units every three hours. She received 400,000 units of penicillin every day until she had received 2,000,000 units.

The following is the laboratory report from the hospital:

Urinalysis:

Light amber, slightly turbid, acid reaction 1,020 specific gravity trace of albumin, negative for sugar

Blood examination:

Hbg.	76 per cent
Rbc.	4,230,000
Wbc.	11,200
Neutrophiles	63 per cent
Eosinophiles	2 per cent
Basophiles	1 per cent
Lymphocytes, Lg.	1 per cent
Lymphocytes, Sm.	33 per cent
Urea nitrogen	17 mgm. per 100 cc.
Glucose	90 mgm. per 100 cc.

Throat smear and culture—On admission or prior to administration of penicillin:

Direct smear unsatisfactory
Throat culture shows staphylococcus albus
Micrococcus catarrhalis after three days.

Throat culture—After administration of 2,000,000 units of penicillin:
Culture shows gram negative bacilli, presumably bacillus Friedlander. No more staphylococcus albus or micrococcus catarrhalis was evident *in the cultures.*
Direct Smear: Occasional epithelial cells.
Many gram negative bacilli.
Few gram positive cocci.

Clinically the patient has not coughed since the fourth day *after the first administration of penicillin.*

Since the discharge from the hospital the patient has visited the office for her regular injections of bacteria and house dust. Up to date (six months) there has been *no recurrence* of the following clinical symptoms:

(1) The *constant hacking cough and morning coughing* spells.

(2) Inspiratory and expiratory dyspnea.

(3) Aches and pains in her body on cloudy or rainy days.

How far the clinical improvement is psychogenic or how *long it is going to last, nobody can tell but the patient feels a* remarkable clinical improvement since the administration of 2,000,000 units of penicillin.

The accompanying report from the laboratory with reference to the cultures from the nose and throat is of great interest. Before the administration of penicillin, the cultures contained staphylococcus albus *and micrococcus catarrhalis,* but after the administration of penicillin they were not present on culture.

CASE NO. 22

S. K.: *Female, white, thirteen years old,* schoolgirl.

C. C.: *Bronchial asthma of four years' duration. Attacks of* asthma day and night for the past three years. *Sometimes,* they lasted for several hours at a time, especially from twelve o'clock midnight until three or four a.m.

H. P. I.: At age of nine, she had a severe cold with marked nasal obstruction. *On examination,* right sided nasal polyps were found, which were removed *by an otolaryngologist.* An attack of asthma occurred the following week. *Since then, the* attacks had become progressively worse.

P. H.: When she was six months old, she had an attack of bronchitis, followed by pneumonia. Since then, she had been subject to colds. There was no improvement in her condition at the seashore or in the mountains. Her colds were just as bad in winter as in summer, and she was not affected by changes in the weather. At the age of twelve years, she had a radical sinus operation—with no benefit. One year later, she had *scarlet fever.* Shortly thereafter, she had begun with recurrent attacks of fever from 101 to 103 degrees every two or three months, lasting a week or ten days. During the fever, all her clinical symptoms were aggravated, i e., constant coughing and wheezing, dyspnea, purulent nasal discharge and purulent expectoration. It was practically an attack of status asthmaticus every two or three months, lasting one to two weeks. In spite of these attacks, she would be around and attend school for two to four weeks at a time, at periods of freedom from attacks.

F. H.: *Mother had fall* hay fever at the age of twenty years, which had lasted for five seasons and improved spontaneously. No other personal allergy.

On examination, the patient appeared very ill, an undernourished, and unmanageable, cranky youngster. The chest was distended and full of moist rales, cyanosis of the visible mucous membrane, weak pulse and poor heart muscle tone. X-ray studies revealed a marked infiltration of the tracheo-bronchial lymph glands. She had been deprived of eggs, meats, and milk and had lived on vegetables, bread, and malted milk for the last two or three years.

She was tested for inhalants, food, pollen, bacteria and house dust. She did not give any positive reactions, except to various bacteria of the respiratory system.

The patient was placed on the following treatment·

1. *Forced diet: four or five small meals a day.* Large sugar intake, as a dehydrating agent to control the excessive secretion from her bronchial mucosa as well as her nasal passages.

The following were given for 2 to 3 weeks in rotation and repeated if necessary.

(a) 1 tablespoonful of sugar at each meal.

(b) 1 ounce syrup of hypophosphite (plain, no strychnia) four times a day.

2. Every third day an intravenous glucose 25 per cent in 50 cc. of physiologic salt solution.

3. Bacterial vaccine treatment.

(a) An autogenous vaccine, made from cultures taken from the nose, throat, and sputum.

(b) Special catarrhal vaccine, containing all the bacteria of the respiratory system to which she gave a positive reaction.

(c) House dust extract, made from her own dust environment.

4. Immuno-haemotherapy:

Healthy members of the family who were free from respiratory diseases and who were not subject to colds, were used as donors. 5 cc. of whole blood in a sterile syringe, containing a saturated solution of ½ cc. of sodium citrate was injected into the gluteal region of the patient every third day. If no local or constitutional reaction took place, it was increased to 10 cc. or 15 cc. Ten injections in all were given.

5. Mild local treatment to the nose and throat every day or every other day.

6. Other general symptomatic treatment as indicated. After six or eight months, the patient made a 50 per cent improvement, and she was able to take care of herself. The patient discontinued treatment and left for Arizona. Several years later she returned North — was married against advice, at the age of nineteen years. While she was not perfectly free from attacks, nevertheless she was able to take care of herself and her household.

Comment: This patient had an attack of bronchitis and pneumonia in infancy, from which she did not completely recover. At puberty, she had an acute fulminating pan-sinusitis, precipitating attacks of bronchial asthma. Her visible mucous membranes were red and

swollen, evidently the hypertrophic type. On examination, she always had moist rales in her chest, and recurring attacks of purulent expectoration and purulent nasal discharges preceding and accompanying her asthma attacks. However, when she called for study, (before the discovery of sulfa or penicillin drugs) she made a satisfactory recovery, under proper management and treatment.

CASE NO. 23

B. W.: Male, white, thirty-seven, bookkeeper, married, two children. Referred from Atlantic City, N. J., Feb. 1936.

C. C.: Bronchial asthma for last eight years.

P. H.: Usual childhood diseases. Tonsillectomy at twenty-five. Always subject to colds. For the last year-and-a-half he had had recurrent attacks every two or three months of fever—from 99° to 103°, pulse 110 to 130, associated with severe attacks of bronchial asthma.

H. P. I.: For the last four months, attacks were progressively worse and more frequent. Three weeks before admission, shortly after eating a dinner which contained eggs and chicken, he was seized with an attack of bronchial asthma. Had small doses of epinephrin three times every half hour. Two hours later, had an intravenous injection of aminophylin, but he was not relieved. Three hours later, he received 10 mm. of epinephrin. Immediately after the injection, he experienced precordial pain, palpitation, and a half hour later he became unconscious. He was admitted to a hospital and placed in an oxygen tent for three days. He was well enough to be discharged in ten days. He was placed on our service in a Philadelphia hospital for further study.

On admission, he had continuous attacks of bronchial asthma, (status asthmaticus), with dry wheezing sounds in the chest. External fomentation and internal medications could not produce any expectoration. Temperature from 99° to 102°, pulse from 100 to 120, blood pressure 135/70; blood chemistry, blood cultures and blood counts were all within normal limits. X-ray

was negative for pneumonia. His attacks were not always relieved by epinephrin, or by intravenous aminophylin. If he was relieved it was for a very short duration. (Helium and oxygen inhalations for ten minutes every half hour for two days.) He was placed on sedation; 2 grs. of phenobarbital sodium, intramuscular injections every four to six hours, (p. r. n.) and other symptomatic medications. He responded favorably to the aspirin-phenacetan combination. He also had autohemotherapy on three occasions every other day. Had daily treatments of the nose and throat.

Was tested for inhalants, foods, pollen, bacteria and house dust. Was positive to:

Kapok, cow hair, dog hair, and eggs....................each plus 2
Beef, cucumbers and buckwheat..........................each plus 1
Staphylococcus group, micrococcus tetrangeous,
influenza and house dust.. ....each plus 3

On the sixth day, he was clinically free from attacks of dyspnea, but the dry wheezing sounds in his chest continued. On the ninth day—T. P. R. became normal. Was perfectly well and free from asthma and wheezing, but was kept in the hospital five extra days to prevent any recurrences.

Was advised to stay away from all the positive foods. Was discharged from the hospital much improved, and was referred to the O. P. department for further treatment.

The following course of treatment was outlined:—

1. House dust extract made from his own house dust.
2. A mixture of all animal inhalants to which he was positive.
3. A concentrated autogenous vaccine made from cultures taken from his nose, throat and sputum.
4. A special catarrhal vaccine, containing all the bacteria to which he gave a positive reaction.

He improved after several months of specific desensitization with:

(a) House dust.
(b) Bacterial vaccine.
(c) Animal inhalants.

However, treatment was continued once a week for three years longer to prevent recurrences.

Comment: The following points of interest are noted in this case:

1. On testing he gave a positive reaction to chicken and eggs. This will account for the last attack of status asthmaticus which began while he was in Atlantic City following a dinner of eggs and chicken.

2. He was epinephrin-fast.

3. After the large dose of epinephrin (10 to 12 mm.) he experienced precordial pain, palpitation and fast pulse, which was followed by unconsciousness for several hours. The unconsciousness may have been due to:

(a) Either an associated angioneurotic edema of the internal organs, or

(b) To the toxic effect of epinephrin.

4. Recurring attacks of acute pharyngitis may have been responsible for the recurring attacks of fever.

5. He had an atrophic rhinitis and pharyngitis, which extended throughout the bronchial mucosa.

6. Upon physical examination, there were never any moist rales present in his chest, but always a dry wheezing sound Drugs, local applications to the chest, i.e., mustard plasters, hot compresses, and the like did not induce any moist rales or any expectoration.

CASE NO. 24

L. B.: Male, white, thirty-eight years, upholsterer, married, two children. Called at office June 7, 1934.

C. C.: Bronchial asthma of twelve years' duration. The attacks were mild the first year but beginning with the second, they became progressively worse. Asthmatic attacks occurred any time during the day or night. They were usually worse at four or five a.m. and lasted from two to three hours—and were always followed by profuse expectoration. Attacks were the same in winter and summer and usually worse on any slight exertion.

Nasal obstruction but no sneezing.

Gastric and abdominal pain, associated with irregular and uncontrollable attacks of vomiting.

H. P. I.: His asthmatic attacks began shortly after his second attack of influenza in 1922. Several years later he noticed that foods in general were aggravating his condition. Regardless of the nature of the foods, they would always produce heartburn and vomiting. He had severe pain in his stomach and abdomen, marked distention and constipation.

P. H.: He had the usual childhood diseases. Influenza in 1918 and again in 1922, which initiated his asthmatic attacks. Operated upon for nasal obstruction in 1922, afterwards his condition improved for two years. Had a tonsillectomy and adenoidectomy in 1924 with some improvement. *Bilateral polypectomy three times in 1926 with no improvement. In 1932 he had a submucous resection which relieved his nasal obstruction.*

He had been admitted to a hospital for the following special studies from July to November, 1933:

1. Complete allergic study. (*He was not informed of any* positive reactions.)

2. Complete G I and G B examinations. (With no definite final diagnosis.)

3. X-ray of the sinuses. (Showed infection in the ethmoidal and antrum areas.)

4. X-ray of the chest. (Revealed chronic infection of the chest, with possible bronchiectasis, but no tuberculosis.)

He did not respond to any form of treatment. Finally, for relief, he was advised to use epinephrin injections, which he took every three or four hours, day and night. The severe asthmatic attacks became progressively worse. His irregular abdominal and gastric pains accompanied by vomiting spells were so severe he had to give up his work and was practically an invalid for one and a half years, prior to his coming under our care.

Examination: Patient was tested for pollens, animal epidermals, foods, dust and bacteria.

1. Positive to oats, mustard, flaxseed, mackerel, raspberry, beef, milk, carrot, house dust — each plus 2.

2. Duckmeat, tuna fish, sweet potato, corn meal, banana, white potato, lamb, chicken, wheat, orange, cabbage, cucumber — each plus 1.

3. Various bacteria of the respiratory system—each plus 3.

It was found that pus pockets developed at the site where injections were given, although the solution was sterile. On testing for bacteria, the site of every positive reaction turned into a papule followed by a pustule and a necrotic area (not exactly like Arthus', nor Schwartzman's, phenomenon, but of a similar nature), which took several days to heal.

Patient was advised:

1. *To abstain from all positive foods.*
2. Injections from his own house dust.
3. Autogenous vaccines.
4. *Catarrhal vaccines, containing all of the bacteria of the* respiratory system, to which he gave a positive reaction.
5. Staphylococcus toxoid.

Injections were given subcutaneously.

No customary fruit juices to be taken on an empty stomach. No fried or sour foods and small meals every two or three hours. Sedative medication for his stomach such as:

Rx:

Phenobarbital sodium
Codein sulfate ....each grs. 1/4
Ethyl amino benzoate.................... grs. 3

These powders to be taken before each meal.

As experienced on testing, it was necessary to make the dilutions constantly weaker, until the site of injection did not present a necrotic area. Dilutions of vaccine had to be started with 1:100 and dilutions of the dust started with 1:200.

Two months later, the asthmatic attacks became very mild. He had very little expectoration, and epinephrin injections could be reduced by 50 per cent. In September, or four months later, his

attacks practically stopped and he discontinued epinephrin injections. In the sixth month, he returned to work. He was caught in a snowstorm in December, 1934, without transportation, and had to walk a mile to his home. He became ill again at this time, with a recurrence of all of the symptoms he had had before. However, he recovered in four weeks' time, and was perfectly well for a year, but discontinued treatment, against advice. He returned a year and a half later, with a recurrence of all the symptoms. At this time he did not respond to any form of treatment, and was practically in status asthmaticus for several months. When he did improve, his family took him to Arizona.

Comment:

1. This patient has had a great number of positive reactions to many allergenic factors.

2. He had a great deal of shock tissue involvement in many organs of his body, such as

(a) Nasal mucosa and sinuses.

(b) Bronchial mucous membrane.

(c) Gastro-intestinal system.

These patients, if they do improve, must be under continuous care for many years, to obtain more balancing power of the organs involved.

CASE NO. 25

M. A.: Male, white, forty years, druggist, married, two children. Called at office March 1938.

C. C.: (1) Spring hay fever for twenty-five years, fall hay fever and asthma for three years.

(2) Pain in gastric and abdominal area for many years, associated with extreme belching and marked distention.

(3) Perennial nasal obstruction.

(4) Insomnia, easily fatigued, loss of weight (15 pounds in three years).

(5) Extreme salivation, alternating with extreme dryness.

P. H.: *Eczema of scalp* and measles in infancy. Hives in 1918. Tonsillectomy in 1920, complicated by continuous hemorrhages, in bed for six weeks. Nasal polyps were removed on several *occasions in 1924.* Patient has difficulty in breathing, palpitation, and is subject to colds in the winter months for many years. In winter of 1936-1937, he was in bed for four weeks with joint pains and diagnosis at that time was acute rheumatic arthritis. As a druggist, he was aware of the fact that he was highly positive to many drugs, such as aspirin, bromides, cocaine and codeine. He has been suffering from insomnia for the past twenty years.

F. H.: Paternal great aunt had asthma. Mother has G. I. trouble, brother has G. I. trouble, spring hay fever and asthma. The patient was tested for inhalants, foods, bacteria, house dust, pollens, and molds. He was found positive to:

1. Spinach and onions—each plus 4.
2. Lettuce, corn, coffee, mixed ragweed pollen and dust—each plus 3.
3. Oranges, cottonseed, grapefruit, peas, cocoa, cucumber, peaches, peanuts—each plus 2.
4. Potatoes, olives, tea, mixed grasses and sycamore tree pollen groups—each plus 1.

Patient was found positive to various bacteria of the respiratory system. The skin presented a very high degree of dermographia. Testing was very unsatisfactory, and had to be re-checked on many occasions. Blood count, blood chemistry, urine, feces, all were within normal limits.

The following course of treatment was outlined: The patient *to be desensitized for:*

1. Sycamore tree pollen.
2. Grass pollen.
3. Fall pollen.
4. Dust from his own environment.
5. Special vaccines containing all of the bacteria of the respiratory system to which he gave a positive reaction.

The patient was instructed how to give himself injections, and a schedule was worked out for him as follows:
Two or three various antigenic dilutions to be given at any one time, such as dust, bacteria and pollen. Injections were given daily and began with very small appropriate dilutions—as per charts considered under "Pollen, Dust and Bacteria Desensitization."*
He called at the office once a week for a check-up and fresh dilutions were given as they were needed.

6. *Intramuscular injections of calcium gluconate and Vitamin* B_1 given on alternating days.

All his allergic manifestations, perennial rhinitis, nasal obstruction and attacks of bronchial asthma improved very satisfactorily.

Several attempts were made to check up and to evaluate all the foods to which he gave a positive reaction on testing,** but it was impossible to continue, because he was never free from gastric and abdominal pains. His insomnia was just as bad as before.

Comment: This patient has had shock tissue involvement in many organs of his body such as,

1. Nose and throat.
2. Bronchial mucous membrane.
3. Gastro-intestinal tract.
4. Distinct vaso-motor disturbances as expressed by attacks of salivation, alternating with extreme dryness.
5. Severe form of dermographia.

The patient has had multiple sensitivities. He was highly positive to:

1. Sycamore pollen group.
2. Mixed grass pollen.
3. Mixed ragweeds.
4. Foods.
5. Dust.
6. Bacteria.
7. Drugs.

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*See p. 104.
**See chapter on Food Elimination by Combined Skin and Food Testing, p. 53.

Persevering in desensitization for the above positive allergenic factors has improved the patient almost 60 per cent. This was very satisfactory to the patient. Nevertheless periods of well being were of short duration and he suffered recurring attacks.

CASE NO. 26

M. G.: male, white, thirty-one years, carpenter, divorced, one child. Was placed in a hospital on our service April 14, 1939.

C. C.: Bronchial asthma since 1934. For the last few weeks, the attacks are continuous, day and night without relief, (status asthmaticus).

H. P. I.: In 1934, while working in an excavation for a subway, many feet (60 to 80 feet) below the street level, he caught a severe cold, with chills, fever, a severe headache, accompanied by a dry cough. Several days later, attacks of bronchial asthma began.

P. H.: In the same year (1934), he underwent the following:

1. Tonsillectomy and adenoidectomy.
2. Nasal polyps removed several times.
3. Many sinus irrigations.

All these gave no relief. He was admitted to one hospital for eight weeks, with no relief. In the first year of his illness he lost 61 pounds. While in a hospital, he received an injection of atropine, which was followed by an attack of blindness and *mild delirium for six hours. The asthmatic attacks were getting* progressively worse, from four to ten attacks a day, which lasted from one-half to four hours. In trying to obtain climatic relief, he left for San Antonio, Texas, in 1935, and stayed there eight months. He spent two months in Arizona and six months in Del Rio, Mexico. While out west, he worked as a cowboy. His condition remained the same, although at times he felt better. In 1937, he returned to Philadelphia. His attacks were so frequent and severe that in one day he gave himself twenty injections, or one ounce of epinephrin, without relief. He was placed

in one hospital after another for four or five weeks at a time, with no improvement. In the last two hospitals, he had five blood transfusions, and several bronchoscopic treatments. He claimed he had been, *for many years, sensitive to the following drugs:*

1. *Aspirin*
2. Caffeine
3. Belladonna
4. Iodides.
5. Digitalis
6. Argyrol

He could not tolerate salt water solution irrigations of the nose and sinuses.

The attacks were milder during the summer months. Winter weather and severe colds aggravated his condition.

F. H.: His sister suffered from severe fall hay fever, asthma and perennial bronchitis.

This patient was very intelligent, apprehensive, looked ten years older than his age, with sunken eyes, hollow cheeks, and pretended to be cooperative.

On admission under our service, he had continuous asthma, accompanied by a dry cough and no expectoration.

He was tested for inhalants, foods, bacteria, house dust, pollen and molds. He was found positive to:

1. Cattle hair, pyrethrum, tobacco, staphylococcus group, micrococcus catarrhalis, streptococcus group, cocoa, dust—each plus 1.
2. Mucor mucedo, tricophyton, alternaria—each plus 1.
3. Fall pollen extract—plus.

He had several severe constitutional reactions in the hospital while under our care, after various drug trials. For example:

1. *After 5 gr. of aspirin he had a severe asthmatic attack, and became unconscious for one-half hour.*
2. *After 2 gr. of phenobarbital, he had a severe attack of* asthma, followed by an attack of pruritis and *exfoliative* dermatitis, which lasted for about a week.
3. While in his third week in the hospital, when he was practically free from all the severe symptoms one day,

a nurse sprayed the ward with an insecticide. He was immediately seized with a severe attack of asthma, which lasted from twenty-four to thirty-six hours. It was evidently *due to the pyrethrum, which the insecticide contained.*

4. One mm. of autogenous vaccine brought on a severe attack of chills and fever, with a period of no attacks of bronchial asthma for twelve hours. He had many more sensitivities, too numerous to describe.

The following observations and studies are of interest:

1. Patient's temperature the first three weeks in the hospital ranged from 99 to 102.
2. White count ranged from 14,000 to 18,000 with a poly average of 83 per cent.
3. Glucose—105. *Urea Nitrogen—14.*
4. Wassermann and Kahn—Negative.
5. On bronchoscopic examination, very viscid secretion was aspirated *from both sides, mostly from the left. Left* main bronchus contracted.
6. Bronchoscopic secretions: Direct smear shows many polymorphonuclear cells; many epithelial cells; no tubercle bacilli seen. He felt very bad after bronchoscopic examination, and all subsequent bronchoscopic treatments were carried out with very little benefit.
7. Blood culture: sterile after sixteen days of incubation.
8. Sputum culture: mold obtained from sputum shows monillia albicans.
9. Sedimentation Test: five in sixty minutes.
10. X-ray reports of the chest are as follows: "There is no cardiac, trachial, or diaphragmatic displacement that would suggest atelectasis. The appearance is that of a chronic *thickening of the root shadows, due to fibrosis, as a result* of chronic infection of the chest."
11. Ear, nose and throat reports state that there is present an atrophic rhinitis—all the sinuses were dense and

poorly transilluminating. X-ray reports revealed that "there is evidence of pathology involving all the paranasal sinuses."

The following course of treatment was administered:

1. Helium and oxygen inhalations were given fifteen minutes every two hours or p.r.n., when he had severe attacks.
2. Diathermy treatment to the chest was given with very indefinite results.
3. Patient had relief from epinephrin injections occasionally, and then only when it was given intradermally.
4. Aminophylin was given intravenously, 3½ gr. in 10 cc., and 7½ gr. in 20 cc., with variable results. It was noticed that if aminophylin was given after blood letting, (from 6 to 8 ounces), it was much more effective than when given alone.
5. All medication prescribed had to be started with ½ gr. doses and gradually increased and results noted. We found patient could take sod. salicylate, sod. bromide, and he reacted well to hot mustard plasters.
6. Both antra were punctured, markedly thickened pus was washed out and irrigated with a mild antiseptic. This gave good results at times.
7. Very small doses (1:100) dilutions of autogenous vaccine and stock dust were given every day.

In the fifth week, the patient was free from attacks of bronchial asthma. He felt stronger and was able to walk around in the ward. After the sixth week he was well enough to be discharged from the hospital and was referred to his family physician, with instructions for further care. Was in a country convalescent home for several weeks. Two months later, he had a relapse, and when improved, his family sent him back to California. He remarried and was able to resume work. In July 1945 (in California), he contracted a severe cold, with a return of bronchial asthma and status asthmaticus. He was given some medication, and went into a stupor and coma for several hours.

When he recovered, he was placed in a hospital in an oxygen tent. After more medication, he relapsed into another stupor and coma, and died (August 1945).

Comment: All sensitivity states were dormant in this individual, until the age of thirty-one, when he contracted an upper respiratory infection, while doing excavation work. This severe infection started his trend of various allergic syndromes.

He had an involvement of many shock organs, such as:

1. Sinuses
2. Gastro-intestinal tract
3. Bronchial mucous membranes.

This patient had multiple states of sensitivities: sensitive to inhalants, foods, drugs, bacteria, molds and dust.

His cellular structures were shocked continuously by states of sensitivities and he never fully recovered the physiologic functions of his various organs.

Chapter Nine

POOR RESULTS FROM POLLEN DESENSITIZATION AND EMERGENCY POLLEN TREATMENT

I. *Poor Results From Pollen Desensitization*

(1) *Moderate State of Sensitivity*
(2) *Moderately Severe State of Sensitivity*
(3) *Dilution Chart*
(4) *The Daily Drop Method*
(5) *The Most Severe Type*

II. *Emergency Co-Seasonal Treatment*

I. POOR RESULTS FROM POLLEN DESENSITIZATION

The use of timothy for desensitization is advised for patients who suffer from rose fever (grass pollinosis). In our experience 30 per cent of these patients give very small reaction to timothy, but are very highly sensitive to orchard grass. Unless orchard grass is included with the timothy, the results are usually poor.

One to two injections a week for only one or two days a week was inaugurated in allergy clinics, because the doctor could not afford to give more time. This very same system has been carried on in the doctor's private practice. One wonders what results would be accomplished with patients who have multiple pollen sensitivity to trees, grasses, plantain and ragweed pollen. How could one get along with one or two injections a week? If many pollen extracts are given at the same time, how can one distinguish which one is responsible,

should a constitutional reaction take place? A much safer policy is to give a different pollen extract on separate days, at regular intervals, in order to determine the capacity of the patient for any increase in pollen extract.

With patients with acute coronary attacks, with obstetrical patients after their confinement, after major surgical operations, or any acute illness, the treatments are either discontinued or abandoned by the attending physician. How can a coronary heart or acute rheumatic heart disease convalesce favorably, if they have recurring attacks of asthma and hay fever?

Some surgeons, after breast amputations, or other operations for actual or suspected malignancy, forbid the continuation of injections with allergenic extracts, in spite of the fact that they were informed that pollen extract is not equivalent to estrogenic hormones.

The asthma and hay fever may return any time when desensitization is discontinued too long. Very few of the allergic individuals are really permanently immunized. At best, there is a temporary tolerance developed on the part of the shock tissue to the offending allergen.

It is best for the attending physician to urge the patient to resume desensitization treatment as early as possible after their acute emergencies are over.

The general practitioners are treating ten times as many allergic patients as all the allergy specialists combined. The manufacturers who supply the extracts to the general practitioner are making every possible effort to simplify the course of treatment. However, they are not able to prevent the occurrence of constitutional reactions. The treatment sets of pharmaceutical houses are frequently inadequate and fail to protect the patient from his respective pollen season. This form of treatment is becoming unpopular with the patient, as well as with the doctors at large.

The treatment of 40 per cent of allergic patients (who must be individualized) is a simple problem After proper study, one has to advise the patient to abstain from positive foods; to remove the offending inhalants and contacts that produce positive reactions.

It is not so easy to plan a course of treatment for patients suffer-

ing from seasonal or perennial hay fever and asthma with multiple sensitivities, especially when complicated with bacterial infection.

It must be realized that one single allergen is capable of producing all the syndromes of allergic diseases *in any one individual. Milk or egg sensitivity may produce dermatitis, simple urticaria,* angio-neurotic edema, pruritis, perennial hay fever and asthma. On the other hand, eight to ten allergenic positive factors may produce one allergic manifestation, such as hay fever and asthma. It is not uncommon to find multiple states of sensitivity in one patient.

Pollen of trees, grasses, plantain and ragweed may account for hay fever and asthma from March to October or November. House dust, bacterial proteins and other inhalants, such as animals or feathers, may account for hay fever and asthma for the rest of the year—all in the same individual.

The above type of patient usually develops invalidism, with the usual high degree of morbidity and occasional mortality, because any attempt on the part of the doctor for desensitization has failed.

In pollen-sensitive patients we must consider:

1. *Location* of the shock tissue may be in the eye, nose, throat, *roof of the mouth and bronchial system.*

2. *The degree of the state of sensitivity* in any one of the locations may vary from the mildest to the most severe.

It is best to divide the pollen allergies into three clinical groups:

1. Moderate State of Sensitivity—30 per cent.
2. *Moderately Severe State—60 per cent.*
3. *Very Severe State—10 per cent.*

1. *Moderate State of Sensitivity*

In the moderate state of sensitivity, patients are subject to attacks of *hay fever only. They begin to react to* dilutions of from 1:8000 to 1:10,000 of the *respective pollen. They are not subject to any* constitutional reactions. *They can be easily* worked up *from a milder* to a stronger concentration, giving injections two or three times a week, for two to three months before the pollen season.

At the season, they can reach a protective dose of from 10 to 12 mm. of one per cent pollen extract. As a rule, these patients have very good seasonal results. Two-thirds of the highest dose reached before, or at the season, can be given once in two or three weeks throughout the year.

2. *Moderately Severe State of Sensitivity*

These patients suffer greatly, from the beginning of the pollination season, with hay fever and asthma, which does not terminate with the end of pollination. They give positive skin reactions on testing to dilutions as mild as 1:25,000 to 1:50,000.

In the course of treatment they do not pick up very readily when changing from a milder to a stronger dilution. Any increase of the pollen extract may bring on severe constitutional reactions.

In 1922, we started a revolutionary form of treatment on twenty volunteer patients, who consented to call for injections four or five times a week, for an indefinite time; even for a year or two if necessary. They were very ill throughout the pollen season as well as throughout the year with hay fever and asthma. Some were sensitive to one, or two and in some instances, to all four of the pollen seasons in our Eastern States (New York, Pennsylvania, New Jersey and Maryland). Others were also highly positive to dust and various inhalants. Six patients who were from our clinics, had been under treatment from two to three years—ten were from other allergy clinics; four had been treated by allergists in their private offices for several years. All had had poor results. Five of the twenty dropped out, but resumed treatment when they learned how to give themselves hypodermic medication. They had to call once, or twice a week, to check the dose of dilutions for various pollen extracts and other allergens.

This *Daily Injection Method*, in the course of two or three years, has been very successful in nineteen of the twenty patients, with almost perfect results. Since 1925, we have adopted this new method of pollen treatment and we refer to it as the *Daily Drop Method of Desensitization.*

In adopting this new method of pollen treatment, we were guided by the following facts:

1. Safety.
2. Good results.
3. Rare occurrence of constitutional reactions.

In the twenty patients, we had one or two with mild constitutional reactions which were easily controlled by small doses of epinephrin.

4. Treatment could be carried out in the office.
5. We urge every patient to learn how to give injections to himself and his children. The following points outlined are the proper instructions in the use of the hypodermic:

PROPER USE OF THE HYPODERMIC

1. Boil and sterilize before each injection.
2. Practice with sterile physiologic salt solution, one week or longer, until accuracy and confidence are acquired.
3. Learn the proper amount of antigen to be used; also correct method of injecting subcutaneously.
4. Keep record of amount injected and frequency of same.
5. Go back from 3 to 5 mm. in case of a large local reaction.
6. Inject 1 mm. of epinephrin in case of a constitutional reaction, which very seldom occurs.

Twenty-five per cent of our patients give injections to themselves or their children. Girls and boys of high school age and over are also instructed in the above. Patients should come to the office for a check-up once in two or three weeks, or at the time they need another dilution. Just one pollen extract should be checked at any one time. A patient under treatment for several different pollen extracts should come once a week to check each one of the extracts. We seldom have constitutional reactions among those patients who are using the Daily Drop Method of Desensitization.

All dilutions are made from a 3 per cent concentrated pollen extract,* which are approximately as follows:

*See chapter on Preparation of Pollen Extract, p. 178.

3. *Dilution Chart*

1 mm. of 3 per cent pollen ext. to 80 cc.—sterile phys. salt sol.—1:50,000.

1 mm. of 3 per cent pollen ext. to 40 cc.—sterile phys. salt sol.—1:25,000.

1 mm. of 3 per cent pollen ext. to 20 cc.—sterile phys. salt sol.—1:12,000.

1 mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:6,000.

2½ mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:3,000.

5 mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:1,500.

10 mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:800.

20 mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:400.

40 mm. of 3 per cent pollen ext. to 10 cc.—sterile phys. salt sol.—1:200.

80 mm. or 5 cc. pollen ext. to 10 cc.—sterile phys. salt sol.—1:100 or 1 per cent.

No protein-nitrogen determination and no further standardization is necessary with this method. The main object of pollen treatment is to start with the mildest dilution which produces a positive local reaction. Gradually increase daily, or four to five times a week, for one to two years or more if necessary. In the course of five or six years, it may be possible (without forcing it upon the patient), to reach an optimum or maximum dose of 10 to 15 mm. of one per cent pollen extract.

Patients with the moderately severe type, who could not at the beginning take dilutions even as weak as 1:50,000, were then able after six or eight years of desensitization, to take 10 to 15 mm. of one per cent pollen extract, once a week throughout the year. They became perfectly free from any hay fever or asthma symptoms and gave very little local reactions to the injections of the pollen extract. In other words, they were desensitized for their respective pollen sensitivities.

4. *The Daily Drop Method of Desensitization*

Begin with 1 or 2 mm. of a dilution of 1:50,000 of the pollen extract, or the weakest dilution to which the patient gives a positive reaction. Increase daily—drop by drop. Always use the intradermal form of injection. The local whealing reaction should not be larger than one-half inch to one inch in diameter. The swelling of the arm should be completely cleared up in twelve to twenty-four hours.

Sometimes it is necessary to repeat the same dose two or three times or more. It may be necessary also to continue the same mild dilution for weeks and months, until the patient develops a tolerance to absorb and assimilate the pollen of the dilution first started, before proceeding to the next stronger dilution. The patient should be worked up slowly to the dilution he can best tolerate, regardless of whether it takes eight or twelve months.

Better results are obtained with small doses during the respective pollen seasons as well as during the perennial treatments. Large doses, advocated by some allergists in conjunction with epinephrin or ephedrin, have been a failure in our experience, because they have not prevented the occurrence of constitutional reactions, nor helped to desensitize the patient.

All the patients who took the *Daily Drop Method* were glad to give so much time because the results were good, and many who were invalids were able to resume their work.

After two or three years of this method of desensitization, it may be necessary to continue with two or three injections a week, for several more years, especially when subject to multiple sensitivities.

Some of these patients could never be worked up (even in two or three years), to dilutions stronger than 8 to 10 mm. of 1:800 (Dilution No. 2), contrary to the general belief that to obtain good results, they must be worked up to ½ or to 1 cc. of one per cent pollen extract.

The physician can obtain a 3 per cent concentrated pollen extract from any pharmaceutical house supplying allergic products. He can

always obtain plenty of sterile bottles, with the necessary amount of salt solution, to make his own dilutions as per chart.

Concentrated 3 per cent pollen extract can be kept indefinitely anywhere from two to three years, while dilutions should be made up fresh every few weeks.

The following cases may serve as illustrations:

CASE NO. 27

S. K.: Male, white, twenty-eight years old, single.

Called for treatment in April 1940.

C. C.: Perennial bronchial asthma of 14 years' duration. Unable to work for last eight years. For the last eight months, or since the fall of 1939, had continuous attacks of bronchial asthma.

P. H.: Measles at twelve followed by bronchitis which lasted for several weeks. T. and A. when fourteen years old; at twenty had several nasal polyp operations; when twenty-one a submucous resection with no improvement.

Always worse in summer, from June to October. Had perennial nasal obstruction but no hay fever symptoms. Better in winter except those of 1934 and 1940.

F. H.: Uncle on father's side has bronchial asthma. Cousins on both sides and one brother have fall hay fever.

He was tested for inhalants, foods, pollen, bacteria and house dust. Was positive to ragweed pollen, grass pollen, plantain pollen and house dust extract, each, plus 3. Marked local reactions with pseudopods (in ten minutes) to various bacteria of the respiratory system.

Outline of Treatment

He was treated with ragweed, grass and plantain pollen, house dust extract and special catarrhal vaccine (a mixture of all the bacterial proteins to which he gave a positive reaction). He was

informed that if he would come daily for desensitization, there was a good chance for him to have some benefit for the coming grass and ragweed pollen season. He consented to do this.

Treatment was started with the following dilutions of the various extracts (antigens):

(1) 1:50,000 dilutions grass pollen extract
(2) 1:50,000 dilutions ragweed pollen extract
(3) 1:50,000 dilutions plantain pollen extract
(4) 1:100 dilutions stock house dust extract
(5) 1:10 dilutions special catarrhal vaccine.

He was placed on the *Daily Drop Method* of pollen desensitization as illustrated by the accompanying charts.

Chart No. 1 (S.K.)

1940	Grass Pollen 1:50,000	Ragweed Pollen 1:50,000	Plantain Pollen 1:50,000	Stock Dust Ext. Conc. 1:100	Special Cat. Vaccine 1:10
April 18	1 mm	1 mm		1 mm	
April 19	2 mm		2 mm		1 mm
April 20		2 mm	3 mm	1 mm	
April 22	4 mm	3 mm			2 mm
April 23		4 mm	5 mm	1 mm	
April 24	6 mm	5 mm			3 mm
April 25		7 mm	7 mm	1 mm	
April 26	8 mm	8 mm			5 mm

The above chart is part of the record of the patient's original treatments. He was started with mild dilutions daily of several antigens at one time, but in separate injections. In several weeks he experienced a marked improvement. Attacks of asthma were less frequent and less severe. Spent a fairly comfortable summer and after the fall season, returned to work. He was encouraged to work about 60 per cent of his capacity.

Chart No. 2 (S.K.)

1944	Grass Pollen 1:200	Ragweed *Pollen* 1:400	Plantain Pollen 1:200	Stock Dust Ext. Conc. Conc.	Special Cat. Vaccine Conc.
July 12		6 mm		1 mm	
July 14		6 mm			4 mm
July 17	6 mm			1 mm	
July 19			12 mm		4 mm
July 21		8 mm			
July 26		9 mm		1 mm	
July 27		10 mm			4 mm
July 31		12 mm		1 mm	

The above is part of the record of treatment of the same patient several years later. From very mild dilutions, gradually and slowly he was worked up by the *Daily Drop Method* of desensitization, so that in 1944 he was able to take much stronger concentrations three or four times a week. In the second, third, and fourth year, the frequency and the doses of the pollen extracts were usually reduced after their respective pollen season. Two or three months prior to the respective pollen season, it was resumed daily and increased to as much as the patient could take.

After July, the grass and plantain pollen extracts were given once a week, or once in two weeks, while the ragweed pollen extract was given *daily* in order to work him up for the coming ragweed pollen season.

From October the doses of ragweed pollen were reduced; injections were given once a week, or once in two weeks.

From March the doses of the grass and plantain pollen extracts were increased *daily* to stronger concentrations in order to work up and increase the patient's protection for the approaching grass and plantain pollen season.

Chart No. 3 (S.K.)

1945	Grass Pollen 1:200	Ragweed Pollen 1:100	Plantain Pollen 1:100	Stock Dust Ext. Conc. Conc.	Special Cat. Vaccine Conc.
March 10		3 mm			5 mm
March 15	10 mm			1 mm	
March 16			5 mm		5 mm
March 17			5 mm		5 mm
March 19	11 mm				
March 26			6 mm	2 mm	
March 29		4 mm			5 mm
March 31	10 mm				
April 18		4 mm			4 mm
April 20	11 mm				

This is part of the patient's record during the sixth year of treatment. Patient feeling in good health after five years of desensitization. He is still taking injections once or twice a week. Stronger concentrations of all his antigens are continued on different days at different intervals.

CASE NO. 28

A. S.: *Male, white, forty-two years old, married.*

Called for treatment November 1943.

C. C.: Perennial rhinitis of six years' duration. From May to September the hay fever symptoms were so severe he had to stay in an air-conditioned room to get some comfort.

H. P. I.: Worse for last four months. September 1943 developed hoarseness, cough, wheezing and expectoration. Extreme salivation which awoke him once or twice during the night. Could not swallow the saliva fast enough and at times it produced nausea and vomiting. During the night he had to keep towels in front of his mouth to absorb the flow of saliva.

P. H.: He was advised to live in the country because he was subject to colds and occasional attacks of bronchitis throughout the year. Had many attacks of hives and angio-neurotic edema on hands, face, tongue and mouth. For five or six years he had preseasonal treatment with timothy grass pollen with poor results.

For the past year, he gave himself injections of 6 to 8 mm. of *1 per cent of timothy grass pollen* once *in* two or three weeks. Worse for the last year.

F. H.: Brother had had fall hay fever and asthma for fifteen years.

He was tested for inhalants, foods, pollen, bacteria, house dust and molds. Was positive to glue, feathers, cocoa, spinach, sardines and paprika—each, plus 1. Timothy, orchard, June, rye and plantain grasses, dust and to many bacteria of the respiratory system—each, plus 2.

Outline of Treatment

Was advised to abstain from all foods to which he gave a positive reaction; also to abstain from highly seasoned foods which could stimulate the salivary glands to excite excessive salivation.

A course of treatment was outlined to begin with the following antigens:

1. Mixed grass pollen extract..................	1:6,000	dilutions
2. Plantain pollen extract..........	1:25,000	dilutions
3. Dust extract from home and factory....	1:100	dilutions
4. Autogenous vaccine made from cultures of nose, throat and sputum........	1:10	dilutions
5. Special catarrhal vaccine including all bacterial proteins to which he gave positive reactions	1:10	dilutions

(See Chart No. 1, A. S.)

Comment: The possible reason why he failed to get good results in the past after four or five years of treatment may have been the following:

1. Incomplete testing. He was not tested for foods. He was tested for timothy grass pollen only, disregarding other spring and summer pollen. Neither was he tested for house dust or bacteria of the respiratory system.

2. Treated with timothy grass only. His sensitivity to orchard, June, rye and plantain grasses was entirely overlooked.

3. In the perennial treatment the doses of grass pollen were large enough to produce a continuation of mild constitutional reactions with aggravation of all his symptoms.

This patient proved very cooperative and intelligently carried out the daily injections (sometimes twice a day), of all his antigens as previously mentioned.

At first he called at the office for a check-up once a week. He has made a very spectacular recovery. In a few months he was free from all his allergic manifestations.

Since July 1944, he came to the office once in three or four weeks. He is working in the garden against advice but he is perfectly free of symptoms.

After eighteen months of the *Daily Drop Method of Treatment,* he was able to take stronger concentrations of the respective antigens as follows:

1. Grass pollen extract—1:400 dilutions once a week.
2. Plantain pollen extract—1:400 dilutions once a week.
3. Dust extract concentrate—3 to 5 mm. once a week.
4. Autogenous vaccine—3 to 5 mm. once a week.
5. Special catarrhal vaccine—3 to 5 mm. once a week.

He gave himself injections twice a week:

Monday—1. Grass pollen extract
2. Dust extract
3. Autogenous vaccine

Thursday—1. Plantain pollen extract
2. Special catarrhal vaccine

He came to the office for a check-up once in three or four weeks.

CHART (A.S.)

Date 1943 Dec.	Plantain Pollen Extract 1:25,000	Grass Pollen Extract 1:6,000	Dust Extract Home & Factory 1:100	Auto-genous Vaccine 1:10	Spec. Cat. Vaccine 1:10
7	1 mm.		1 mm.	1 mm.	
8		1 mm.			1 mm.
9	2 mm.		2 mm.	2 mm.	
10		2 mm.			2 mm.
11	3 mm.		3 mm.	3 mm.	
12		3 mm.			3 mm.
13	4 mm.		4 mm.	4 mm.	
14		4 mm.			4 mm.
15	5 mm.		5 mm.	5 mm.	
16		5 mm.			5 mm.
17	6 mm.		6 mm.	6 mm.	
18		6 mm.			6 mm.

5. *The Most Severe Type*

These patients usually show a positive skin reaction to dilutions as mild as 1:50,000 up to 1:100,000 or milder. In addition to the *severest attacks of hay fever and asthma, they are subject to some* local and general pruritis, dermatitis, and angio-neurotic edema, especially in the mouth and face.

Some of these patients are epinephrin fast, or highly toxic to any administration of epinephrin.(31) They are also apt to be sensitive to the very same drugs usually prescribed for their relief. These patients develop *status asthmaticus.*

Their treatment is similar to the moderately severe type, except that extra caution must be used; to start with a much weaker dilution, such as 1:100,000, or milder. It may take them a longer period of time for desensitization as compared with the moderately severe type. In three or four years, they develop some form of tolerance and can be very easily controlled and relieved of symptoms.

The following case may serve as an illustration:

CASE NO. 29

R. L.: Female, white, twenty-three years, single, office clerk. Was admitted to the hospital on our service in May 1942.

C. C.: Patient had an immediate constitutional reaction following injection of grass pollen extract by her family physician. This injection was the same dose and dilution as those she had received every four days for the preceding three weeks, but was given from a fresh solution just received from a pharmaceutical house. 8 mm. epinephrin were given every half hour for three doses, then every hour till 3 cc. were used. Patient's condition was unsatisfactory and hospitalization was advised.

On admission to our service she had generalized erythema, angio-neurotic edema of the hands, feet, face, and extreme pruritis all over her body. Chest was clear, no wheezing, no moisture. She had marked dyspnea, severe chest pains and pre-cordial pains. Respiration 40. Pulse 140-160.

P. H.: Patient had rose fever—five years' duration. Her symptoms always began with the first or second week in May, lasting until the end of July. She was perfectly well the rest of the year. She had had grass pollen treatment for the last four years with some benefit, until a constitutional reaction took place. Diagnosis: Constitutional reaction to pollen followed by a toxic effect of epinephrin prior to admission. Patient was treated with sedation and other symptomatic medication. Was discharged and referred back to the family doctor, with an outline for future treatments.

January 1945, patient was referred again by her doctor. He informed us that since she had the constitutional reaction in May 1942, he was unable to make any advancement with her pollen desensitization. Patient was unable to tolerate dilution of grass pollen as mild as 1:100,000.

Taking the doctor's suggestions into consideration, the patient was tested with dilutions of 1:200,000 grass pollen extract; 1:200,000 dilutions of plantain extract, ½ mm. each intradermally. She had some slight local reaction to both, the size of an inch,

with wheals and pseudopods. After waiting one-half hour at the office with no untoward results, she was sent to her place of business. Upon arrival at her office, she fainted as a result of a constitutional reaction, dyspnea and wheezing, with pruritis of her eyes, nose, and all over her body. She felt better after taking ¼ gr. ephedrine-sulphate. She could not continue her work and was sent home for the day.

Because she was highly positive to grasses (mixture of timothy, orchard, and June), and plantain pollen extract, treatment was instituted on different days for each of the pollen extracts, beginning with 1 mm. of 1:400,000.

A schedule was outlined for her as follows:

She was instructed how to give herself subcutaneous injections in the upper half of the thigh muscle, alternating from right to left side. Grass pollen was injected on Mondays, Wednesdays and Fridays; then plantain pollen on Tuesdays, Thursdays and Saturdays.

She began with 1 mm. from each of the dilutions, 1:400,000. The dose was gradually increased every day by 1 mm. until she reached 5 mm. Dilution had to be repeated several times from 2 mm. to 5 mm.; then from 5 mm. to 10 mm.; from 10 mm. to 15 mm. After that, injection was started with the next dilution of 1:200,000 in the same way. By the middle of July 1945, she was oscillating from 10 mm. to 15 mm. of this dilution (1: 200,000).

Comment: For the first time in six years she was perfectly well during the months of May, June and July. She was free from any hay fever and asthma symptoms although taking very mild dilutions.

II. EMERGENCY CO-SEASONAL TREATMENT

Patients who call at the height of the pollen season for treatment are usually in their first or second year of development to pollen sensitivity.

They go to their family doctor, with a complaint of a cold, who may or may not always recognize that the patient is suffering from seasonal pollen disturbances.

On the other hand, we have had patients with many previous seasonal attacks and knew they were suffering from seasonal pollen sensitivity, but were not properly advised as to when they should call for treatment. Their symptoms may have been so mild in the first few years of development that they did not believe treatment was necessary. At the third or fourth season, alarming symptoms began to develop. The treatment varies with the patient's state of sensitivity and depends upon the particular shock tissue involved. But there are certain general rules which can be applied to all of them.

Daily injections of a dose of the weakest dilution of pollen extract to which the patient gives a positive reaction when examined. The patient, with a *moderate state* of sensitivity begins with 1 mm. of 1:10,000 dilution of the respective seasonal pollen, gradually working up to 10 mm.

The patient with a *moderately severe* state of sensitivity, begins with 1 mm. of 1:25,000 dilution of the respective seasonal pollen, gradually working up to 10 mm.

The patient with a *very severe state* of sensitivity begins with 1 mm. of 1:100,000 dilution of the respective seasonal pollen, gradually working up to 10 mm. The dose (repeated with slight variations), of the above mentioned dilutions in all three of the instances, should be continued four or five times a week throughout the pollen season.

In the moderate type of sensitivity the results from the injections alone are very good in approximately 20 per cent; another 20 per cent are complete failures, while in about 60 per cent there is marked improvement.

The moderately severe and very severe types of patients, in addition to the daily drop method of weak dilutions of pollen extract, also have to be advised how to arrange a pollen free room.

The highly advertised air-conditioned room is very expensive in comparison with the installation of pollen filters. Many patients have spent weeks in air-conditioned rooms and had little relief from pollen hay fever when complicated with asthma and bronchitis. Patients with asthma and bronchitis, regardless of the cause, are worse when subjected to cool air. That is why we have so many victims with winter

bronchitis. The air-conditioned rooms may have less pollen in the atmosphere, but the asthmatic bronchitis is aggravated by the cold air.

The ideal pollen free room is made possible by placing pollen filters in one window, while the rest of the windows and doors are kept closed. The patient gets the filtered air (free from pollen or dust), pumped into the room by an electric motor.

It is not always possible in private homes to get pollen filters in a hurry. In an emergency a pollen free room can be made at the home of the patient by simply keeping the doors and windows continuously closed. Drapes, rugs, spreads, and other dust collectors should be removed. Clothes worn outside should be removed and kept in a different room. Canvas screens, or bedsheeting tacked to screen, can be used in adjoining room. This should be continued for the duration of the height of the season, which usually lasts ten to fourteen days. The woodwork, window sills, doors and floors should be wiped with a wet rag twice a day. Clothing and bedding should not be shaken in the room. They should be carefully folded up and removed from the room.

Many patients, who suffer from the severe forms of pollen hay fever and asthma, verging on status asthmaticus, have experienced a state of well being after twelve to forty-eight hours, in a pollen free room.

Many years ago, we had pollen counts made of an open and a closed room in the same house. Glycerin-coated slides were placed on the floor of the open room. Similar slides were placed on the floor of the closed room. There was very little difference in the pollen count of both slides in the first twenty-four hours. In the second twenty-four hours there was 25 per cent less pollen in the closed room, as compared with the open room. On the third day, there was 50 per cent less pollen on the slides of the closed room. On the fourth day about 70 per cent less pollen was found in the closed room.

After the fourth and fifth day, in the closed room the patient usually felt much better and was able to pursue his regular occupation. If necessary, he should return to eat and sleep in the pollen free room the remainder of the twenty-four hours for the duration of the height of the season.

It is difficult to convince the doctor as well as the patient, that there will be sufficient oxygen to breathe when the doors and windows

are closed; that "fresh air" is "poisoned air" for the duration of the pollen season.

Another problem of the pollen sensitive patient, is the proper handling of the various shock tissues involved. The severity of each location varies in different individuals. For example:

Nasal symptoms predominate in 40 per cent
Eye symptoms in 20 per cent
Throat and roof of mouth symptoms in 5 per cent
Bronchial symptoms predominate in 25 per cent

Ten per cent of the patients have no hay fever, i.e., no involvement of the eyes, nose or throat, but the main shock tissue is in the bronchial system, with attacks of constant coughing and wheezing, followed by uncontrollable asthma and bronchitis.

Nasal vaso-constricting medications and Praetz Displacement Treatment with medicated packs may be used with benefit in acute head colds, acute sinusitis and other acute respiratory diseases of short duration. However, in allergic syndromes, it has been our experience this treatment has done more harm than good. Patients who have had much local treatment for allergic rhinitis tell a similar and quite typical story. The immediate relief from vaso-constricting medication is short-lived and the nasal mucous membrane becomes more swollen than before. The more often the same medication is applied, the shorter is the shrinkage effect. Consequently, different drugs of stronger concentrations must be used. If cotton packing is used, additional mechanical irritation results. Finally, the mucous membrane loses its tone and does not respond to any type or quantity of local vaso-constrictors.

We always advocate the use of bland oily substances for the vestibule of the nostrils, such as white, yellow, carbolated or mentholated vaseline, zinc ointment, and plain cold cream. All of these must be tried in rotation and the one most effective used. They soothe mucous membranes, and act as dust and pollen filters. The highly advertised nasal mechanical filters are being discarded by the patients as they are too irritating. They do not prevent the pollen from affecting other shock tissues, such as eye and chest symptoms.

The eye symptoms in the *moderately severe* and *severe* types of

pollinosis may overshadow all the patient's complaints. A most effective treatment used every four to six hours is suggested as follows:

1. Flush eyes with cold physiologic salt solution or gauze pads, wet with cool or ice cold physiologic salt solution, placed over eyes for three to five minutes.

2. Rx.

Holocain hydrochloride solution 1/2 per cent to 1 per cent—4 drams.
Epinephrin hydrochloride solution (1-1000) 10 mm. m.f.s.

One to two mm. instilled in each eye.

3. After these drops, the eyes should be rested from three to five minutes and then a couple of drops of mineral oil placed in each eye. Sometimes just one or two drops of the holocain hydrochloride solution, as mentioned above, is all that is necessary to make the patient comfortable.

The roof of the mouth and throat may be very itchy at times, disturbing the patient to such an extent that he scratches the roof of his mouth with his finger to relieve the itching. I have had many patients in my office with infected, bleeding mouths due to scratching in an effort to relieve the agonizing itching.

I find that it gives some relief to swab the roof of the mouth with the following:

Rx.

Cocaine hydrochloride—5 gr.
Epinephrin hydrochloride solution (1:1000) 20 mm.
Antipyren—40 gr.
Glycerine—2 drams
Saturated solution of boric acid, q.s. to make one ounce.
M.F.S.

Swab the throat and the roof of the mouth with a cotton applicator, saturated with the above mixture, three times a day. This can be done by the patient in his home, or in the doctor's office.

The greatest difficulty of all is to treat the patient when he has advanced to a severe state of pollen asthma and bronchitis. It is best

for the patient and the doctor to make plans in advance to prevent the occurrence of the above.

If all of the measures enumerated above are consistently carried out by patient and doctor, the severe attacks of asthma and bronchitis may be avoided.

Precautions are briefly outlined:

1. Very mild dilutions of the pollen injections (Daily Drop Method of Treatment), to which the patient gave a positive reaction on testing.

2. *Construct a dust and pollen free room.*

3. Drops in the eyes, with above Rx.

4. Swab throat and roof of the mouth daily, with above Rx.

5. All symptomatic medication should be started with very small doses and very gradually worked up, or increased to the physiologic effect in order to avoid using drugs to which the patient may be sensitive. In this way one is apt to obtain better results.

CHAPTER TEN

EXERCISE AND REST IN ALLERGIC DISEASES

I. *Exhaustion May Initiate Bronchial Asthma, Perennial Rhinitis and Other Allergic Syndromes.*

II. *Allergic School Children Should Be Exempt from Gymnasium Activities.*

III. *Allergic Children and Adults Should Have Afternoon Rest and Weekends in Bed.*

Exertion and overwork may destroy the balancing state of health in an allergic individual. When exhaustion continues for too long a time, general physical collapse may be the consequence. In a potentially sensitive patient, exhaustion may act as a trigger mechanism and will *initiate any allergic syndrome. In others, it may aggravate the* existing allergic conditions. These patients may be restored to normalcy after a rest of two to four weeks, either at home or in a hospital, or by a suitable vacation. Some may require a longer period to recover from the damage done to the mucous membrane by exhaustion and fatigue.

I. EXHAUSTION MAY INITIATE BRONCHIAL ASTHMA, PERENNIAL RHINITIS AND OTHER ALLERGIC SYNDROMES

We have records of *asthmatic bronchitis* and *perennial rhinitis* patients who were free from symptoms until they experienced some severe exhaustion, such as running to catch a trolley, or climbing subway and elevated train steps. It takes some patients a week and others several months to recover. One asthmatic mother ran two blocks to a hospital with a convulsive child in her arms. The child recovered

from the convulsion, but the mother went into status asthmaticus for two weeks. It was several months before she recovered.

It matters very little what causes are responsible for the swelling of the mucous membrane after exhaustion but the serious fact remains that it may precipitate, or aggravate, an allergic state. Patients should be warned by their family doctor to avoid overwork and exhaustion at all costs.

II. ALLERGIC SCHOOL CHILDREN SHOULD BE EXEMPT FROM GYMNASIUM ACTIVITIES

Principals and teachers in public schools should realize that allergic children ought to be excused from games, certain exercises, and running errands. Because allergic children are likely to be dust sensitive, they should not be permitted to erase blackboards, clean dust-laden erasers, or hand out books. Children should be discouraged from sitting or lying on their stomachs on the drafty floors when playing games or reading the comics. The floor is a cold, unsanitary place, usually, and is responsible for numerous head- and chest-colds in children.

School children, who have been discharged well and free from asthmatic attacks, have returned with recurrences due—in part—to the above mentioned exertions and dust contacts. In others, the factors responsible for the recurrent asthmatic attacks were traced to games played after school. One boy, a doctor's son, returned six months after having been discharged free from symptoms with recurring bronchial asthma, induced by a wrestling match with another boy.

III. ALLERGIC CHILDREN AND ADULTS SHOULD HAVE AFTERNOON REST AND WEEKENDS IN BED

Allergic adults also have to realize that it is much better to work but 60 per cent of their capacity and keep in good health, rather than indulge in overwork and, subsequently, be laid up for weeks at a time with asthma and bronchitis in a hospital or at home.

Allergic children should have a rest period after school *of from one-half hour to one hour in bed. It is best also to put some children*

to bed weekends in order to prevent the recurring, acute allergic symptoms. Allergic individuals, adults and children, however, should have controlled exercises. Gradually as improvement takes place, skating and bicycling may be allowed for ten or fifteen minutes, under the observation of their parents. After a period of well being, from four to six months, more time may be allowed for exercise.

Adults and school children may suffer from spasmodic coughing *as a result of laryngial and tracheal involvement. The bronchial mucosa* is perfectly clear from any inflammatory process. The site of the trouble is an acute, or sub-acute inflammation of the larynx and the trachea. In some it is the forerunner of asthma and bronchitis. It is diagnosed as acute asthma on account of occasional wheezing in the chest found after a severe coughing spell.

Many of these patients have been tested and found skin positive to several allergens. They are usually pronounced severe asthmatics on account of their positive skin findings. We have checked and eliminated all of the findings, and not one of the positive skin reacting allergens was actually responsible in producing the condition. Evidently they were only potentially positive skin factors.

A prolonged bed rest, two to four weeks, with absolute silence, permits the inflammatory processes in trachea and larynx to subside, and then usual activities may be gradually resumed.

The following cases may serve as illustrations:

CASE NO. 30

G. J. R.: Male, white, thirty-five years old, physician.

C. C.: Perennial rhinitis, ten years' duration. Nasal obstruction off and on, becoming progressively worse.

P. H.: Frequent head colds; intervals between them became less and less. Attacks were the same during winter and summer. Had a sub-mucous resection in 1937; also sinus operation without any beneficial results; recurring migraine type of headache over the left frontal. Was discharged from the Army Medical Service after serving one year and was referred by the Army doctor to us for study.

Tested for inhalants, foods, pollen, bacteria, house dust, but did not show any positive skin reactions except to various bacteria of the respiratory system. Further investigation disclosed he was a general practitioner, worked very hard prior to getting into the Army. The Army basic training aggravated his condition.

We advised him to give up general work, confinement cases, and to develop more office work and take afternoon rests. In the course of six months, all his allergic manifestations (perennial rhinitis, nasal obstruction, frequent colds and headaches), improved. He has been perfectly well for the past two years.

CASE NO. 31

H. G.: Female, white, forty-five years of age, married.

C. C.: Perennial rhinitis and uncontrollable coughing and sneezing spells of six months' duration. A profuse, watery, nasal discharge which continued, occasionally, during the night, keeping her awake until three and four in the morning. At times towels and bed sheets were saturated. We asked the patient to collect the discharge in a mason jar provided by the hospital dispensary and it measured four ounces. It was a very thick jellatinous discharge which could not pass through a mandler filter.

Was tested for inhalants, foods, pollen, bacteria, house dust and molds. Eighty tests in all with no positive skin reactions to any allergens.

After a great deal of investigation, it was learned that she was nursing a sick mother for the last eight months. Was advised to give up nursing her sick mother and to go to bed, herself, for several weeks. All allergic manifestations cleared up in six weeks. Had a recurrence after two and one-half years due to too strenuous housework.

CASE NO. 32

J. A. C.: Male, white, eight years old, school boy. Called at office August 20, 1943.

C. C.: Uncontrollable cough since April, 1942. It was the same winter and summer. Has become progressively worse. Also

worse on getting up in the morning, and when going to bed in the evening. Occasionally continued the entire night. Coughing attacks and dyspnea caused exhaustion. The constant hacking produced an irritated throat and hoarseness.

P. H.: Eczema of the scalp for six months in infancy. Measles at three years of age; chicken pox at four. Nasal obstruction usually worse at night. Since June 1943, sneezing spells followed by red and swollen eyes. Appetite good. B. M. good. Urine normal.

F. H.; *Family allergy. Two cousins on mother's side have hay* fever and asthma.

Patient was tested for inhalants, foods, pollen, bacteria, and house dust. He was positive to pyrethrum and house dust, each plus 1. Doubtful to orris root, kapok, rabbit hair, corn, cocoa, wheat, spinach. Immediate and delayed positive skin reaction to some bacterial proteins of the respiratory system.

This boy was placed in bed for two weeks, and after that was allowed to go to school, avoiding exertion, such as games, and given a rest period in bed daily. Was advised to stay in bed weekends for several months. *At the same time, treatment was instituted* twice a week with small doses of an autogenous vaccine and his own house dust extract. The nasal obstruction, hoarseness, coughing spells promptly improved. He has been perfectly well for the past two years.

CASE NO. 33

E. H.: Female, white, forty-four years old, married. Called June 6, 1944.

C. C.: Uncontrollable cough, dyspnea and wheezing; hoarseness since January, 1944. Began with a cold, chills, and fever which became progressively worse, followed by a very persistent dry, unproductive cough. Occasional nasal obstruction.

P. H.: *Influenza and double pneumonia while in pregnancy in* 1918. Subject for the last ten years to winter chest colds. On examination, she had inflamed and swollen nasal mucosa and large

inflamed tonsils. No moist rales; no evidence of asthma and bronchitis; pulse 120; temperature 100.

No other personal allergy; no family allergy.

Was tested for inhalants, foods, bacteria, house dust, pollen and molds, with no positive skin reaction. Patient did not give any positive reaction to either stock vaccine, nor to a vaccine made from her own nose, throat and sputum. She did not give any positive skin reaction to stock house dust, nor to tests made from house dust extract from her own home environment. However, treatment was begun with an autogenous vaccine and her own house dust as a non-specific form of treatment.

After several months of treatment, a provocative, positive reaction appeared to her autogenous vaccine and to her house dust.* The doses had to be reduced because the local reactions were large.

After a rest in bed for four weeks, and a complete rest for the larynx as well, she began to improve from the cough, dyspnea, and hoarseness. She has been perfectly well for the past fourteen months.

CASE NO. 34

H. B.: Male, white, seven years of age, schoolboy. Called at office November, 1944.

C. C.: Bronchitis and asthma for the past year.

H. P. I.: It began with a cold in December 1943. Since then, he has been in bed every two months, for one to two weeks at a time, with recurrent attacks of coughing. In bed from February to April with an irregular fever and attacks of bronchitis and asthma. In August, 1944, he had fall hay fever and asthma.

P. H.: Subject to colds since three years of age. Occasional attacks of hoarseness. Sneezing, running nose and slight temperature for seven to ten days, every four to eight weeks. Worse in winter. Well in summer, but had fall hay fever for the last two seasons. For the past three or four winters, he had had to spend

*See Provocative Reaction to Pollen, p. 39.

three-quarters of the time in bed and was unable to attend school. No hives, no eczema, T. and A. in April 1944, with no improvement.

F. H.: Grandmother, maternal, subject to hay fever and asthma.

Patient was tested for inhalants, foods, pollen, bacteria, and house dust. He gave positive reaction to pyrethrum, house dust and ragweed pollen, each plus 2. Doubtful and delayed positive reaction to some bacteria of the respiratory system.

This boy was placed in bed for several weeks. When his condition improved in December, he was allowed to go to school, taking *rest periods after school, as well as week-ends in bed. He is* undergoing ragweed pollen desensitization. During winter of 1944-45 he was free from colds and did not miss school attendance until March 1945. When his parents moved to a new location, the boy ran around an entire day without control. He became overworked, exhausted, perspired and was again put to bed for four days with a recurrent attack of fever, cough, asthma, and bronchitis. The duration of the last illness was short, however, and he had a prompt recovery from the attack of asthma and bronchitis.

CHAPTER ELEVEN

URTICARIA AND ANGIONEUROTIC EDEMA

I. *Food Allergy*
II. *Bacterial Allergy*
III. *Drug Allergy*
IV. *Physical Allergy*
V. *Serum Reactions*
VI. *Constitutional Reactions*
VII. *Treatment*

Angioneurotic edema is a localized swelling of the skin and subcutaneous tissue of the face and limbs, appearing spontaneously and lasting for a few hours up to several days—and longer. The mucous membrane of the lips, pharynx, larynx, gastro-intestinal canal and genitalia may be either separately or simultaneously involved. The lesions in urticaria are frequently confined to the skin of limbs and body, and associated with itching and a sense of tension. Skin disturbances while uncomfortable are not serious. The gastro-intestinal form may cause severe colic; edema of the glottis may sometimes cause sudden death.(32)

While in an occasional patient it may appear only once in childhood or once in early adult life, in the majority of cases, it has a tendency to recur every two to three days for months and years.

In some, it may be very mild, such as involving only a few spots on an arm or leg or any part of the body, while in others it may be so severe and extensive as to involve every part of the body and to make work impossible.

There is no difficulty in recognizing urticaria with, or without, angioneurotic edema. There is difficulty, however, in pointing out the responsible etiologic factors in any individual case.

This clinical syndrome is usually caused by many allergens in different individuals. Any one or many different etiologic factors in the field of allergy may be responsible at different times in any one individual.

In many patients, no matter what studies are undertaken, or what tests are made, the investigators are at a loss to determine the most important factors responsible for the production of this syndrome. It may be due to:

I. Food allergy
II. Bacterial allergy
III. Physical allergy
IV. Serum reaction
V. Constitutional reaction, after an overdose of any antigen from testing or treatment.

I. FOOD ALLERGY

In approximately 60 per cent, the etiologic factors may be ascertained by skin testing for food proteins. There will be present either single or multiple food sensitivities. When patients abstain from the positive foods, the results are very good.

In approximately 40 per cent of the patients, although they abstain from all the suspected and positive foods, they do not improve. Evidently, there must be more than a food allergy present as an etiologic factor in these patients. The positive food tests are only potential factors.

Acute gastro-enteritis, as a result of ptomaine food poisoning (following spoiled or tainted food), may be responsible for the occurrence of angioneurotic edema or urticaria in the future of that individual when he eats the same type of food.

For illustration: If a patient has had an attack of gastro-enteritis as a result of spoiled fish, angioneurotic edema may occur in the future if he eats fish. The same holds true with fowl and meats.

In the above mentioned instances, the responsible foods cannot be determined by food tests, but only by a history of having had ptomaine poisoning (no matter how mild the symptoms), after eating spoiled food.

Probably some damage to the gastro-intestinal mucous membrane in those patients occurred which will interfere in the future with the normal processes of absorption and assimilation. From then on, similar protein foods may be thrown into the circulation before they are properly digested, thus causing attacks of urticaria and angioneurotic edema.

II. BACTERIAL ALLERGY

Another possible cause of angioneurotic edema frequently overlooked is bacterial allergy.(33) Patients may have various foci of infection, located in infected teeth, tonsils, gall bladder or appendix, and in females, chronic infection of the tubes and ovaries, which may act as a source for bacterial allergy.

We have records of forty patients who have had angioneurotic edema and urticaria for from two to five years. They have made a spectacular recovery after surgical interferences as follows:

Twelve patients improved after appendectomy
Seventeen patients improved after tonsillectomy
Ten patients improved after removal of gall-bladder
One patient improved after removal of tubes and ovaries.

It is necessary to clear up all infectious processes in the body before one can expect any improvement from this syndrome.

CASE NO. 35*

Boy N. K.: one-and-a-half years old, bronchial asthma, pruritis, urticaria and angioneurotic edema since age of nine months.

Was tested for foods, inhalants, bacteria. Positive to a number of foods and various bacteria of the respiratory system. Had very large infected tonsils. His symptoms would appear simultaneously with the recurrent attacks of acute tonsillitis. Although he was abstaining from all the positive foods, it did not have any effect

*See Fig. 12.

upon the recurrence of his symptoms. A tentative diagnosis of bacterial allergy, due to infected tonsils, was made. The tonsils were removed about a year ago at the age of three-and-a-half. Since then the boy has been perfectly free from asthma, urticaria and angioneurotic edema.

III. DRUG ALLERGY

The doctor should inquire if the patient has taken any drugs recently, especially within the last twelve to twenty-four hours, prior to the appearance of urticaria or angioneurotic edema.

Urticaria and angioneurotic edema (in our experience as well as on records in medical literature), have appeared after using the following drugs:

1. Acetyl sal. acid
2. Sulphonamide group.
3. Penicillin—oral or parenteral administration
4. Quinine and its alkaloids
5. Atabrine
6. Caroid and papain
7. Barbiturates
8. Oily menstruums of peanut or almond oil used for estrogenic hormones or other intramuscular injections
9. Cocaine; novocaine and its products
10. Arsphenamin or salvarsan preparations
11. Liver extracts
12. Iodides
13. Insulin.

Many other drugs, too numerous to mention, have been reported in medical literature as being responsible factors in the occurrence of urticaria and angioneurotic edema.

IV. PHYSICAL ALLERGY

Physical allergy does occur in some patients but it is less common. A mild form of urticaria and angioneurotic edema may take place when the body is exposed to heat and cold, or to the sun's rays.

V. SERUM REACTIONS

Reactions may take place after the administration of animal serums for various therapeutic purposes, such as diphtheria and tetanus anti-toxin.

Sixty per cent of the patients will have either an immediate or a delayed reaction in the form of general urticaria and angioneurotic edema, associated with marked general or local pruritis. The symptoms are more alarming when they appear immediately after the injection. Symptoms may be so severe as to alarm the patient as well as the attending physician. The allergist advocates the following precaution before the administration of horse-serum anti-toxin:

Make a preliminary skin test. Administration of anti-toxins should be avoided in the presence of positive, local reactions, or with the history of asthma or any other allergic state. However, when anti-toxins must be given, begin in small divided doses (even in dilutions), at frequent intervals. In spite of all precautions, severe attacks of urticaria and angioneurotic edema follow various serum injections. Patients who have had horse serum anti-toxins in their early life, may be candidates for attacks of angioneurotic edema in the future, if the serum is repeated.

VI. CONSTITUTIONAL REACTIONS

In the course of pollen treatment, a constitutional reaction may occur after an over-dose of pollen extract. The most alarming symptoms in addition to asthma and hay fever are generalized erythema, urticaria and angioneurotic edema. The latter type of reaction may follow tests or treatment with any allergenic substance.

VII. TREATMENT

The management and treatment of acute attacks, or of the chronic forms may depend upon the various etiologic factors responsible in each individual case.

1. If it is due to: *food allergy* or indiscretion in diet, followed by ptomaine poisoning:
   a. A prompt laxative.
   b. Bicarbonate of soda or physiologic salt solution enema.
   c. Starvation diet—no other food except hot tea, toast, baked potato, or very well cooked rice for twenty-four to forty-eight hours.
   d. Starch or bicarbonate of soda baths, followed by calomine lotion to relieve the pruritis.

2. If *bacterial allergy* is suspected, especially following acute tonsillitis, pharyngitis, and the like, local treatment to the throat and tonsils may be necessary, or specific chemotherapy.

3. If attacks follow after *serum* injection or after *constitutional reactions* from an over-dose of pollen extract or any allergens, then epinephrin, intravenous calcium gluconate or aminophyllin may be indicated.

The following drugs may be used to advantage to relieve various symptoms in this clinical syndrome, i.e.:

1. Small doses of epinephrin (1:1000) 2-4 mm. every two to three hours—by hypo, p.r.n.
2. Aminophyllin—3½ grs. (in 10 cc. dilutions)—7½ grs. (in 20 cc. dilutions) given very slowly intravenously once in six or eight hours.
3. Four to six mm. of pituitrin every two to three hours, either together or alternating with epinephrin.
4. Intravenous calcium gluconate once every eight or ten hours.
5. Rx. Calcium lactate—grs. 20.
   Ephedrine sulphate—grs. ¼ - ½.
   This powder to be taken every three or four hours. a.c.
6. Recently, Dr. J. H. Black(33A) advocated vitamin "K" in chronic conditions of this syndrome. Two mg. of vitamin K before each meal—at least 6 mg. to be taken daily.
7. Auto-hemotherapy.

8. Benadryl and pyribenzamine are still in experimental stage.

There are many other measures, too numerous to mention, that one may find necessary to use as the case arises.

The following cases may serve as illustrations:

CASE NO. 36

R. K.: Female, white, twenty-seven years old, single, milliner.

C. C.: Angioneurotic edema and urticaria for several years.

H. P. I.: For the last three years, especially in the winter, as soon as she would leave her home in the mornings for work, she would get a swollen jaw, lips and forehead. By the time she would reach her place of business, the swelling would be so extreme, it would be impossible for her to remove her hat. The extreme swelling of the lips made it impossible for her to talk for at least two hours.

She attributed her troubles to the cold winds. She put extra clothing on her face and neck to keep the wind from blowing on her—without any benefit. Several times a week after bathing at nights, she would get hives all over her body followed by chills and swelling of her eyes, face and mouth.

P. H.: Chicken pox, measles and whooping cough in childhood. She has had several attacks of indigestion and abdominal cramps.

F. H.: Father had rheumatism. No other family allergy. Patient was tested for foods, inhalants, dust, and bacteria. She was positive to oats and pork, each plus 3; lamb, chicken, beans, apples and paprika, each plus 2. From the result of the above testing, one could account for angioneurotic edema in the winter months, because she indulged in oatmeal and pork products for her breakfast, to each of which she gave a plus 3 reaction. Her occasional attacks of hives and angioneurotic edema at night after bathing were the result of her evening meal, which consisted quite often of the things to which she was

positive. The patient was advised to abstain from all foods to which she gave a positive reaction. She was referred to her family physician in her home town for further instructions and for follow-up treatment. In three weeks' time, the patient was free from further attacks of urticaria and angioneurotic edema.

CASE NO. 37

B. H.: Female, white, ten years old.

C. C.: Angioneurotic edema of her face, mouth and chin, of several weeks' duration.

H. P. I.: For the first time in her life, she left Philadelphia for a summer camp. After her first week in camp, she began to develop extreme swelling of her face, mouth, chin and eyes, so that it was impossible for her to talk or eat. The palms of her hands were also swollen.

Once she experienced hives and a rash on her body, which lasted overnight, accompanied by extreme pruritis.

P. H.: She had the usual childhood diseases. No other personal or family allergy.

The patient was tested for foods, inhalants, dust and bacteria. She gave a reaction to tomatoes, plus 4. The girl admitted consuming excessive quantities of tomatoes in camp. Since she abstained from tomatoes and all its products, her swelling disappeared and she left Philadelphia for camp to spend the rest of the summer.

CASE NO. 38

H. S.: Male, white, twenty-eight years old, married, one baby.

C. C.: Urticaria and angioneurotic edema of four years' duration.

H. P. I.: Four years ago, after having had lunch of tuna fish salad, patient had an attack of indigestion, vomiting and fainting. One hour later, he was covered from head to foot with a scarlet rash, associated with marked itching. His face, arms

and legs were swollen. In a couple of days, he became well, under appropriate treatment. Two weeks later, he had a similar attack of urticaria and angioneurotic edema. He had irregular wheal-like rings on body and extremities about 3 to 4 inches in diameter, with borders raised from the skin surface and many of the wheals were confluent. It took several weeks before he felt better. The following year, he had a salmon salad sandwich while on a picnic. An hour later, he had vomiting and diarrhea, with a temperature of 103. His whole body was covered with wheals as described above and he had extreme itching. Both feet, ears and fingers were swollen and the patient was in agony from itching and pain. He was hospitalized and improved after taking epinephrin and pituitrin.

F. H.: Father had had asthma for ten years. He died at the age of fifty-eight from asthma. His sister had eczema and erythema of the face and fingers.

He was tested for foods, inhalants, dust and bacteria. He did not give any positive reactions, except plus 1 to peanuts, tuna fish and several bacteria of the respiratory system.

Comment: The results of the food testings did not show enough to justify his severe clinical manifestations of urticaria and angioneurotic edema. This patient had infected tonsils, pain and tenderness over the gall bladder area. He was advised to abstain from all fish foods and peanut products. He was referred to his family doctor with a note to remove his foci of infection, such as tonsils and gall bladder. Several months later he had a tonsillectomy. He has been perfectly free from further attacks of urticaria and angioneurotic edema.

CASE NO. 39

S. L.: Female, white, seventeen years old, medical technician student. Referred by her family physician after being treated for several months, without improvement.

C. C.: Swelling of hands and face, of four months' duration. It began two weeks after graduation from high school. The

attacks were also more severe shortly before and after the menstrual period. The excitement of graduation and endocrine factors were considered responsible.

H. P. I.: In February 1944 she had had a bad cold, with chills and fever lasting for three days. On the second day of her illness, swelling appeared on her lips and her hands. Since then she had attacks of angioneurotic edema every morning, affecting various parts of the body such as face, hands, and feet. The possibility of drug allergy was ruled out, because she did not have any medication during her acute illness.

P. H.: Subject to four or five colds during the winter, i.e., sore throat and sneezing spells lasting from seven to ten days. On examination, she had small, inflamed and infected tonsils.

F. H.: No family allergy, no other personal allergy. She was tested for inhalants, foods, pollen, house dust and bacteria. *She was positive to cocoa, paprika, pneumococcus, Friedlander,* and staphylococcus group, each plus 1.

Patient was first advised to abstain from any food article containing cocoa and paprika. After two weeks, she derived no benefit. Attacks of angioneurotic edema were just as pronounced as before.

Local treatment was instituted to clear up the infection from the nose and throat. There was some improvement. Swellings were not as large and less frequent.

The patient was advised to have the infected tonsils removed, because there might be a bacterial allergy responsible for her condition.

She has had no recurrences of attacks of angioneurotic edema for the last two years, or since her tonsillectomy.

CHAPTER TWELVE

PERENNIAL RHINITIS

I. Most Important Symptoms
II. Diagnosis
III. General Treatment and Desensitization
IV. Drug Treatment

Perennial rhinitis has many synonyms. The most common are as follows:

1. Allergic Sinusitis
2. Allergic Coryza
3. Atopic Coryza
4. Vaso-motor rhinitis
5. Vaso-motor attaxia
6. Sinus trouble
7. Perennial hay fever
8. Nasal allergy
9. Spasmodic rhinorrhea
10. Chronic hydrorrhea
11. Hyperesthetic rhinitis and so forth.

The above are all descriptive of pathologic and etiologic stages of the same condition. The clinical symptoms vary from the mildest to the most severe form. They are present with the patient, with some slight variation, all year round. The symptoms usually complained of by patients are a combination of acute, upper respiratory infections, coupled with symptoms resulting from allergic shock tissue manifestation occurring in the nasal mucous membrane.

I. MOST IMPORTANT SYMPTOMS

1. *Sneezing spells* vary in severity and frequency at different times of the day. Spells may continue long enough to exhaust the patient. One patient was referred by an eye specialist, who blamed the separation of the retina and the patient's on-coming blindness on the sneezing spells.

2. *Itching.* Very little itching of the nose and eyes

3. *Secondary conjunctivitis.* Eyes are not usually involved but conjunctivitis and lacrimation may complicate nasal obstruction.

4. *Nasal obstruction.* It may be unilateral, bilateral, or alternate. It may be present day and night, but worse at certain times, such as when going to bed, lying down, or getting up in the morning. Or it may be worse after meals, after exertion or exercise, or after bathing.

5. *Irritable mucous membrane.* In 60 per cent of these patients, the mucous membrane of the nose is irritated, any local treatment may produce uncontrollable attacks of sneezing and running nose. It may last for hours before the patient recovers from the effect of the treatment. Any local application, however mild, is sufficient to produce fits of sneezing. It is best to stay away from any local treatments in this type of patient.

6. *Post nasal drip.* The watery, gelatinous and purulent nasal discharges either obstruct or cause frequent nose blowing or backing up, producing a post nasal drip. These patients are usually troubled with a backing up of the discharges into the naso-pharyngeal space. The latter is the predominating symptom complained of by the patient. At times, it may be so severe as to cause nausea and vomiting.

7. *Morning hacking and coughing.* Patients on arising in the mornings, begin to clear their throats, disturbing everyone in the family by their continuous hacking and coughing. This is one of the symptoms which prompts patients to call on the doctor for relief.

8. *Loss of sense of taste and smell.* The constant nasal obstruction and swollen mucosa destroys the patient's sense of taste and smell. Many patients state that at intervals between nasal obstruction they regain some part of those senses. A great number of patients will regain their sense of taste and smell after they have improved from the perennial rhinitis condition, while in others (depending upon the length of time they have had the perennial rhinitis) no known treatment will restore it.

9. *Color of the mucous membrane.* The appearance of the mucous membrane may be swollen, moist and blanched, or red and covered with a purulent discharge. The character of the color of the mucous

membrane was for many years interpreted as a guide to the possible etiologic pathology. However, we find that the blanched or red mucous membrane varies at different times in the same individual. It may differ in many individuals who have the same allergic positive reactions.

10. *Eosinophelia.* The presence or absence of eosinophelia (in nasal smears) may vary at different times in the same patient. It may also vary in different patients, even though they may have the same etiologic factors. We believe that it is of no diagnostic, therapeutic or prognostic value because it is very irregular in its appearance.

II. DIAGNOSIS

Perennial rhinitis is easily recognized by the layman as well as the general practitioner, but there is a great difficulty in establishing the etiologic diagnosis. It may be due to:

1. Single or multiple allergenic factors easily demonstrable on testing. It is worse when complicated by bacterial infection.

2. Having started as a severe pollen seasonal complaint, with a complete burning out of the mucous membrane, which never had a chance to recover. In this type of patient, while the symptoms will be present all year round, they are apt to be aggravated in the respective pollen seasons.

3. Patients not taking proper care of themselves when they had an upper respiratory infection.

4. To various nasal pathology, such as large turbinates, polyps, spurs, deviated septums, which may produce pressure paralysis of the vaso-motor mechanism supplying the mucous membrane.

5. To improper and prolonged use of vaso-constricting medication. After a certain time, the mucous membrane may lose its vasomotor balancing mechanism.

6. Endocrine and glandular disturbances. It may be due to toxic or reflex action in pregnancy, with the involvement, in some, of the mucous membrane of the stomach, producing nausea and vomiting, and in others, it may produce a disturbance of the nasal mucosa with all its sequellae.

7. Physical allergy. Sensitivity to heat and cold, such as:
   (a) Chilling of the body
   (b) Changes from hot to cold rooms and vice versa
   (c) Going in and out of refrigerators
   (d) Living in air conditioned and cooling system environments.
   (e) Swimming in ocean or river.

8. Chemicals from swimming pools, to various physical agents too numerous to mention, that may produce congestion and stasis of the blood vessels of the nasal mucous membrane or vaso construction resulting in ischemia.

III. GENERAL TREATMENT AND DESENSITIZATION

Treatment of patients with perennial rhinitis depends upon whether they have an allergy, an infection, or a combination of both. Each patient is advised to have:

1. A thorough physical examination.
2. A complete blood count and blood chemistry.
3. A correct allergic diagnosis. A search may have to be made for the factors that are actually responsible for the state of sensitivity. Many allergens may be responsible for the clinical syndrome in a single patient. For example, one may be allergic to pollens throughout the spring, summer and fall seasons; to dust and bacterial allergy throughout the winter months. All of them may account for a perennial rhinitis state in one patient.
4. An X-ray study of the nasal sinuses.
5. An examination by a competent nose and throat man, to determine whether surgery is required to relieve the nasal obstruction. Anything interfering with the patient's recovery should be corrected in the following manner:
   (a) Some patients may have to be placed in bed for several weeks—or longer—to overcome weakness and exhaustion. A proper vacation and a complete rest will relieve inflammation and infection and, at the same time, may restore the atonic mucous membrane to normal.

(b) It may be necessary for certain patients to change their occupations or even their home environment to guard against and abstain from all allergic factors responsible for perennial rhinitis.

(c) Although the patient makes prompt improvement, specific desensitization should be continued for a long time (one year to two years) because the perennial rhinitis has a tendency to recur.

(d) Where specific factors cannot be determined, house dust and bacterial vaccine may be used as non-specific medication.

(e) Local treatment for nasal mucosa, *especially vaso-constricting medication locally, should be avoided. Mild or bland applications are permissible, such as vaseline, zinc ointment, mineral oil,* and the like.

(f) *In a few exceptional cases, it may be necessary to destroy* the atonic or spongy mucous membrane either with chromic acid 5 per cent to 10 per cent or by *ionization by an* experienced otolaryngologist.

IV. DRUG TREATMENT

1. Calcium preparations by the mouth or intravenously in conjunction with thyroid or para-thyroid extracts.

2. Small repeated doses of atropine sulphate, from 1:200 or 1:300 of a grain, repeated several times a day to the physiologic effect. In Europe they have been using beef and fish peptones, if no meat and fish sensitivity were present in the patient. We have used peptones, (7 to 10 grains before meals, three times a day) for many patients with only occasional success. It is advisable to use Armour's or Vitte Fresh Peptone when possible.

3. Iron, vitamin and liver preparations to correct exhaustive states of the patient.

4. Ultra violet light to nasal mucosa.

5. X-ray treatments to nose and sinuses. Many other drugs too *numerous to mention may* be used by the attending physician when indicated.

The following cases may serve as illustrations:

CASE NO. 40

C. M.: Female, white, thirty-eight years old, married, one child.

C. C.: *Perennial rhinitis eight years' duration. The rhinitis* alternating with nasal obstruction. Sneezing spells any time during the day or night, with attacks of dyspnea, which is worse at night.

P. H.: Usual diseases of childhood. Had treatment from competent *nose and throat men, with no improvement.* Was under the care of an allergist, who found various inhalants and food sensitivities, but she did not improve, even after she abstained from all the positive factors. For the last three years she had been becoming progressively worse.

F. H.: Patient's father had asthma for many years and died from pneumonia, aged fifty-two years. No other family allergy.

Patient was re-tested for inhalants, food, pollen, bacteria and house dust, was positive to various bacteria of the respiratory system and to house dust, each plus 2. Urinalysis, blood count, sugar and calcium were within normal limits. Blood-phosphorous 2.5. X-ray of sinuses did not reveal any pathology.

The patient was very much undernourished and underweight. She was sent to the mountains for several months to improve her health and gain weight. This was followed by treatment with a vaccine containing the various bacterial proteins to which she gave a positive reaction. She was also treated with her own house dust extract. The patient made a successful recovery in six months.

CASE NO. 41

S. H.: Female, white, twenty-eight years old, married, one child.

C. C.: Perennial rhinitis, ten years' duration. Progressively worse for the last three years. Nasal obstruction, sneezing spells and rhinitis; begins two hours after arising. Occasional itching of the eyes and nose. Face powder, tobacco produces tingling sensation in the nose, *followed by violent sneezing spells.*

P. H.: Eczema in childhood until two years of age. Tonsillectomy at fifteen, appendectomy at the age of twenty years.

F. H.: Sister had asthma; brother had bronchitis.

H. P. I.: Her rhinitis began shortly after an automobile accident. Since then it had become progressively worse. Nasal obstruction and sneezing started the same day. For the last five months she had awakened often at 5 a.m. with severe spells of sneezing, lasting for hours. These attacks produce pains in the chest and abdomen and leave patient in a state of exhaustion.

Was tested for inhalants, food, pollen, bacteria, and house dust. She was positive to orris root, tobacco, and house dust, each plus 2, with many doubtful reactions to food and to other inhalants. Blood count and other blood studies were within normal limits.

The patient was treated with:

1. Orris root dilution (1:10,000) gradually increased to stronger concentrations.

2. House dust and various bacteria of the respiratory system.

She improved in several months and was perfectly free of all complaints. The treatment, however, was continued for one year longer.

CASE NO. 42

B. L.: Male, white, forty-eight years old, builder.

C. C.: Sneezing spells and rhinitis of six years' duration.

P. H.: Had usual childhood diseases; otherwise, was a healthy man. Was always very uncomfortable after ocean bathing which produced chills followed by cyanosis of the finger tips and visible mucous membrane. It took several hours before he would return to normal after ocean bathing. Warm baths at home did not have any serious effect on him.

H. P. I.: Had no nasal disturbance at any time. In August, six years ago, while visiting his two sons at the University Campus, they induced him to go in the swimming pool. No sooner was he in the pool when he had a terrific chill and uncomfortable feeling in the nose and throat. Since then, he has been troubled with

sneezing spells, a clear watery and gelatinous nasal discharge. They began on arising in the morning and continued off and on throughout the day. On many occasions he could not attend to his work in the morning hours. When his nose was not discharging, it was uncomfortably dry.

Tested for inhalants, food, bacteria, pollen, and house dust. Did not show any positive local skin reactions. A nose and throat specialist examined the sinuses and found no pathology. X-ray of the sinuses revealed the following: "The frontal, ethmoidal, maxillary and sphenoidal sinuses are all perfectly clear. The turbinates are quite large, especially in the lower left naris. It is possible that the turbinates may be responsible for the symptoms."

On inspection, the nasal mucosa at times appeared pale and contracted over the turbinates due to marked vaso-constriction, and, at other times, the mucosa appeared red and swollen.

Patient was treated with intravenous and intramuscular calcium preparations. He received a course of non-specific treatment with house dust and bacterial vaccine but without results. The atonic mucous membrane was finally burned out, on one side at a time, with a 5 per cent solution of chromic acid, and the results were very satisfactory. The above treatment was carried out in the following manner:

A solution containing one per cent cocaine in 1·10,000 dilution epinephrin was used as an anesthetic. It was smeared over the mucous membrane with a cotton applicator. Several minutes later, a wooden applicator with chromic acid solution, 5 per cent on a cotton tip, was smeared over the turbinates very lightly—just enough to turn the skin white A few days later, a small amount of sloughed off mucous membrane was removed from the treated side. There was usually a great deal of discomfort but it was only temporary until the slough came off. The patient had to wait several days before the other side could be treated in a like manner.

A satisfactory recovery was made. However, the house dust extract and vaccines were continued for six months longer.

CASE NO. 43

K. D.: Female, white, nineteen years old, college student.

C. C.: Nasal obstruction, *rhinitis and sneezing for the last* six or seven years. *Unable to sleep and attend school because of the above mentioned symptoms.* Paroxysmal attacks of sneezing on arising which may last from one to two hours.

P. H.: Usual childhood diseases, tonsillectomy at fifteen years; became a mouth breather due to nasal obstruction. Patient was pale, underweight, and undernourished. Had post nasal discharge. She had a feeling of fullness after meals and occasionally nausea and vomiting.

F. H.: Aunt on mother's side has hay fever and asthma. No other family or personal allergy.

Was tested for inhalants, food, pollen, bacteria and house dust. Was positive to sardines, chicken and house dust extract, each plus 2. To *staphylococcus group and influenza*, each plus 3.

Urinalysis, blood count, blood phosphorous and blood calcium all were within normal limits. The patient was told to abstain from the foods to which she gave a positive reaction. Was treated with bacterial vaccines and house dust extracts, starting with dilutions each of 1:100 and gradually increased to stronger concentrations.

She made a satisfactory recovery in three months. All her symptoms of nasal obstruction, rhinitis and sneezing have cleared up. However, treatment with house dust and bacterial vaccines was continued for a year longer.

CASE NO. 44

M. F.: Female, white, eleven years old, schoolgirl.

Called at office September, 1936.

C. C.: Sneezing spells awakened her at about 4 a.m. and lasted until 7 a.m. Was well the remainder of the day. Itching of the nose and occasional nasal obstruction. It was the same, summer and winter. For the last two years, she had been worse

in May and June. The sneezing spells occurred day and night, with more nasal obstruction and marked rhinitis, *itching of eyes* and nose.

P. H.: Pertussis in infancy. Measles and chicken pox at the age of three years. Subject to inflamed, discharging ears until the age of five, when she had a tonsillectomy, after which the ear condition improved.

Was tested for inhalants, foods, bacteria, pollen and house dust. She did not give any positive reactions, except to house dust, plus 3.

Upon physical examination, she showed an infection of the nose and throat. The following treatment was outlined:

1. *House dust extract from her own home environment.*

2. Vaccine from cultures made from the nose and throat.

3. Grass pollen extract—while on testing she did not give a positive reaction to grass pollen, but she gave a positive history, i.e., she was noticeably worse during the months of May and June. Hence treatment with gradually increasing doses of grass pollen extract was decided upon. When we reached dilution of 1:1500, grass pollen extract, she began to give large positive reactions. It was necessary to reduce the dose to 1:3000. From then on she received the usual grass pollen desensitization treatment. In a year's time she was worked up to 5 mm. of one per cent grass pollen extract, 5 mm. of *autogenous vaccine, and* 5 mm. of her own house dust extract.

Comment: 1. This patient had symptoms of perennial rhinitis of several years' duration. House dust extract and bacteria were responsible throughout the year and grass pollen aggravated all the symptoms during the months of May and June.

2. While she did not give any reactions to grass pollen, to start with—after several months of continuous grass pollen injections, she gave a provocative positive reaction to grass pollen.* She made a perfect recovery, in one year, from perennial rhinitis. Treatment

*See chapter on Provocative Positive Tests, p. 39.

was continued once a week for several years longer to prevent recurrence.

CASE NO. 45

L. W.: Male, white, fifty-eight years old, garage owner, married, three children.

Was referred for study May, 1944.

C. C.: Rhinitis and sneezing spells for many years, becoming progressively worse. For the last few months, he had severe nasal obstruction, coughing, dyspnea, and wheezing.

Extreme rectal pruritis; cannot sit down. When he did sit down the area of the rectum, including the scrotum and adjacent tissues of the upper thighs always gave him a hot, burning sensation. Symptoms worse when he perspired, was covered with a rash which many doctors had termed "prickly heat". Has been suffering with these symptoms for six years, but has been worse since June 1943. It did not bother him as much when standing, or when lying in bed—only when sitting or getting in and out of automobiles. Had been under the care of various rectal specialists to relieve the pruritis ani but without results.

P. H.: No hives; never had any skin conditions whatsoever. No seasonal hay fever or asthma However, was under the care of many doctors for years for perennial rhinitis. Usually worse in summer months; suffering from sneezing and rhinitis. Had nasal polyps removed three times. Had nasal ionization. Improved a great deal, but at times he still suffered from nasal obstruction. No family allergy and no other personal allergy.

Patient was tested for inhalants, foods, pollen, bacteria and house dust. He was found positive to camel hair, rabbit hair, goat hair, hair mattress, chicken feathers, orris root, cocoa, mushrooms, mackerel, strawberries, shad, and black pepper, each plus 1. He was positive to stock house dust and to various bacteria of the respiratory system. The patient was instructed to be constantly on guard as to the kind of material and dye of clothing he wore next to his body. He claimed that this made very little difference.

The patient was treated with:

1. *Injections of the animal epidermals* to which he gave a positive reaction.
2. Autogenous vaccine.
3. House dust extract.
4. Instructed to abstain from all foods to which he gave a positive reaction, all condiments and highly seasoned foods, such as paprika, pepper, spices, pickled foods, and the like. This was to help avoid perspiration from burning his body.
5. No colored material to be worn next to his body; such as colored shorts, shirts, etc., especially shades of blue and black.

He made a good recovery from perennial rhinitis symptoms, dermatitis, and pruritis. Several months later he related the following experience. Since the war shortages, he could not obtain white shorts or shirts and was compelled to buy a pair of light blue shorts. After wearing these for several hours, he experienced extreme itching and a rash of his rectal and scrotal area due to the blue dye contact.

Comment: This patient had had symptoms of perennial rhinitis for many years. Had nasal polyps removed several times, had nasal ionizations, all with some temporary relief. No allergic study had been made to help his condition. Complications of coughing, dyspnea, and early asthmatic spells were beginning. For the last several years he had in addition very severe dermatitis, complicated by pruritis ani. The allergic state in this patient was recognized. It is quite possible that there is an interchange of allergic factors. The positive reacting allergens, demonstrated on testing this patient, singly or combined have been responsible in each of several allergic syndromes, i.e.:

1. *Perennial rhinitis.*
2. Early development of asthma.
3. Dermatitis.
4. Pruritis.

Another interesting phase in the multiplicity of the etiologic factors is his sensitivity to various blue dyes, as illustrated by the return of dermatitis when his body came in contact with the blue colored shorts.

CHAPTER THIRTEEN

EMPHYSEMA

I. Juvenile Emphysema
II. Emphysema Past Middle Life
III. Complications of Emphysema Past Middle Life

Emphysema of the lungs may be present in a case of bronchial asthma of several years' duration. It is best to inquire and to ascertain from the history, if the emphysema has preceded or followed bronchial asthma. Emphysema alone is not serious in allergic patients, but it does become *serious when it is complicated by secondary cardiac enlargement or by general gastric and abdominal distention.* It could be properly called or termed *visceral emphysema.* Among the bronchial asthmatics under our care, we have met the following forms:

I. JUVENILE EMPHYSEMA

It may occur at any time in life until the age of fourteen or sixteen years. It is usually not complicated by bronchitis or any cardiac involvement. The majority of these patients make remarkably good recoveries when the etiologic allergic factors have been located and treated. *It is not necessary here to mention what allergenic factors* were found on examination and studies, but *it* is worth while emphasizing that the emphysema "per se" was in no way retarding the patient's recovery as illustrated by the following:

CASE NO. 46*

F. H.: Male, age twelve years.
At six months he had an attack of pneumonia, one month

*See Fig. 13.

later he had pertussis. Afterwards he had attacks of bronchial asthma, at nine years. Examination and studies revealed that he was positive to kapok, hair mattress, rabbit hair, house dust, and to various bacteria from the respiratory system. The carpets and throw rugs that he constantly played on contained a great deal of rabbit hair. The kapok mattress, all carpets, and scatter rugs were removed. While he improved, he was still sick with bronchial asthma. Then it was decided to treat him with the following:

1. House dust extract (own house dust).
2. Autogenous vaccine.
3. Special catarrhal vaccine made from the bacteria to which he gave a positive reaction.

He made a perfect recovery at end of one year. Treatment was continued for three years longer to prevent recurrences.

II. EMPHYSEMA PAST MIDDLE LIFE

Emphysema continuing later in life (past forty-five or fifty years), associated with or following winter bronchitis, but free from cardiac complications and gastro-intestinal distention. These patients, upon careful study and examination, may reveal allergic factors which are responsible for their bronchitis and bronchial asthma. As a rule, this type of patient also responds to treatment as illustrated by:

CASE NO. 47*

L. M.: Male, age fifty-eight years.

Has had bronchial asthma for fifteen years. Was found positive to house dust and various bacteria of the respiratory system. He had injection treatments with his own house dust and autogenous vaccines for two years. He made a fair recovery and was advised to work 40 or 50 per cent of his capacity several days a week only.

*See Fig. 14.

III. EMPHYSEMA PAST MIDDLE LIFE COMPLICATED BY:

1. *Extreme gastro-intestinal distention.*
2. *Right cardiac dilatation.*
3. *Bronchiectasis.*
4. Hypertension.
5. Cardio-renal disease.

These types of patients, whether they have one or more complications, are usually very slow in improving even though the allergenic factors are demonstrable and immunologic and desensitization treatment properly carried out. They do not respond to treatment unless they persevere for a long time.

The doctor must be familiar with the many problems of internal medicine. To be *successful with the above class of patients, one must do the right thing, at the right time, in the right way, and in the right place, i.e.:*

1. *Bronchoscopy* and postural drainage may be advisable in bronchiectasis.
2. A prolonged rest in bed under proper conditions in hypertension.
3. Thyroid and dietary management for reduction in weight.
4. Proper treatment for gastro-intestinal fermentation and distention.

CASE NO. 48*

T. N.: Male, age fifty-five years.

Bronchial asthma of long standing, with extreme distention of the lungs, stomach, and intestines. Responded poorly to treatment.

CASE NO. 49**

R. S.: Male, age fifty-three years. Bronchial asthma of fifteen years' duration. Status asthmaticus from two to three weeks every three or four months.

Marked distention of the lungs and intestines.

Dyspnea on the slightest exertion.

Frequent and severe paroxysmal attacks of precordial pain.

Hypertension 240/140.

*Poor response to treatment.***

*See Fig. 15.
**See Fig. 16.

Chapter Fourteen

PHYSICAL ALLERGY

Heat, cold, light, and so forth, have been recognized for many years as responsible factors in allergic diseases.(34) (35) (36) It is difficult to prove and especially to demonstrate if and when physical allergy becomes a responsible factor in the production of bronchial asthma or in various other allergic syndromes. The testing to demonstrate heat and cold allergy is very awkward and time consuming, but, occasionally, very spectacular. One has to put an ice cube, wrapped in a napkin to any part of the patient's body that is cold-sensitive. In five to ten minutes, one will get a very large wheal at that part of the body. Or, one may place a small hot water bottle, or an electric bulb on any part of the body of a patient, who suffers from heat-sensitivity and likewise obtain a large local wheal.

We have had several patients who were suffering with pruritis and urticaria on the upper part of the body (chest, back, and arms) when exposed to the sun rays, but, who did not have the occurrence of hives, when covered while they were in the sun. Similarly, patients who are cold-sensitive, when suddenly confronted by cold air blowing on them may get local hives or may have a slight chilly sensation with appearance of hives on various parts of the body. However, in the majority of instances application of physical tests to various parts of the patient's body do not produce satisfactory evidence. These tests are usually misleading and therefore generally unreliable. It is important to pay a great deal of attention to the patient's history, and to whether the bronchial asthma or any other allergic symptom is confined only to the summer months or to the winter months. The doctor has a difficult problem to prove the real etiologic factors in patients who suffer with summer asthma only.

A diagnosis of heat-sensitivity as a responsible factor may be made from the following facts:

1. There is usually a history that the patient suffers from bronchial asthma during the summer months, i.e., from the middle of June to the end of September.

2. Whenever there is a cool spell in the summer months, lasting from five to seven days, the patient feels well on the second or third day of the cool spell and remains well until a higher temperature returns. These patients, time and time again, resort to air-conditioned apartments, buildings, and theatres, and are made comfortable in a few hours.

3. They feel much better in the winter months except:
   (a) when overheated.
   (b) when taking hot baths.
   (c) when there is a hot spell lasting from five to seven days, attacks of asthma may take place on the second or third day.
   They feel better, when temperature drops.

4. On testing, these patients do not give any positive reactions to any allergenic substances. A special effort to study the presence of mold-sensitivity and pollen-sensitivity is negative. The conjunctival test and the provocative pollen test is invariably negative.

The above facts and observations would usually be enough evidence to determine in the doctor's mind a case of heat-sensitivity. Certain precautions are necessary, such as, to abstain from:

1. Hot food.
2. Hot baths.
3. Alcoholic drinks.
4. Overheated rooms, crowded, poorly ventilated places, and overdressing.
5. Dancing and running.

This type of patient is usually better off *in cooler climates.*

The following facts may be of interest in the study and investigation concerning cold-sensitive patients.

1. The skin on the finger tips and lips usually crack open from the cold air, ooze serum and form crustations.

2. The damage to skin and mucous membrane becomes progressively worse in proportion to the exposure of the body to the cold air.

3. The blood vessels supplying the skin and mucous membrane, in cold-sensitive patients, undergo an intermittent vaso-spastic contraction.

4. Eating ice-cream, drinking ice cold liquids, and working in air-conditioned places invariably will bring on bronchial asthma and other allergic syndromes.

Some of the patients who suffer from bronchial asthma following winter bronchitis may be only cold-sensitive. The condition of purulent bronchitis or various severe states of bronchial asthma are the complications of bacterial invasion resulting from secondary infection, *on a bronchial mucous membrane weakened by cold-sensitivity. As* soon as this patient is brought to a warmer climate (in a week or ten days) he becomes perfectly well.

The following case will illustrate sensitivity to light.

CASE NO. 50

D. L.: Male, white, thirty-eight years old, physician, married, two children.

Called September, 1943.

C. C.: Itching of eyes and conjunctivitis, eight months' duration, *since February 1943. It began with an attack* of swelling and itching of the eyelids. Was treated by various ophthalmologists without any benefit. Becoming progressively worse. Irritation and rubbing of eyes to relieve the itching produced scabbing on the margin of the eyelids (marginal blepharitis) and occasional loss of eyelashes. He was rejected by an insurance company on account of diabetes. Had various medical examinations and blood chemistry study. Had a high blood sugar tolerance but blood and urine were sugar free.

P. H.: He was subject once each winter in January, to an upper respiratory infection, such as cold in the nose, throat, and chest. No hay fever, asthma, sneezing, hives, nor perennial rhinitis.

No other personal or family allergy.

Patient was tested for inhalants, foods, pollen, bacteria, and house dust. He did not show any positive reactions. Upon examination, he showed a chronically infected pharynx (granular pharyngitis). Upon further investigation, it was learned that at the time his conjunctivitis started, he had installed in his office a new set of fluorescent ceiling light, and suspicion was cast upon these lights. He was advised to refrain from using these fluorescent lights, and to use the electric light bulbs he formerly had. When he discarded the fluorescent lights and used the former electric lights, he made a prompt recovery from his conjunctivitis, itching, blepharitis.

Comment: This patient presented a physical allergy to fluorescent lighting.

CHAPTER FIFTEEN

TREATMENT OF ALLERGIC SYNDROMES

I. Preventive Measures

1. Preventive Measures in Children from Allergic Parents

(a) Infantile Dermatitis or Eczema

(b) Acute or Chronic Respiratory Infection

2. To Prevent Allergic Syndromes in Adults

(a) Measures to Prevent Allergic Disease in Adults

(b) To Prevent Recurring Attacks

II. Specific Indications

Desensitization for Epidermals or Inhalants

III. Psychogenic Treatment

IV. Non-Specific Treatment

1. Emergency Treatments

2. Drug Treatment for Ambulatory Patients

3. Respiratory Exercises

4. Local Nose and Throat Medication

5. Local Skin Applications

Before plans for treatment can be outlined for a patient it is of primary importance for the attending physician to make a complete study and a diagnosis of all the states of sensitivity present. An attempt will be made to outline some of the important phases for the prevention, relief and treatment and whether it may be possible to establish a cure for allergic diseases. It is best to divide the discussion as follows:

I. Preventive Measures
II. Specific Indications
III. Psychogenic Treatment
IV. Non-Specific Treatment

I. PREVENTIVE MEASURES

1. *Preventive Measures in Children of Allergic Parents*

Among the usual run of childhood diseases, the two most dreaded in allergic infants are:

(a) Infantile dermatitis or eczema.

(b) Acute or chronic respiratory infections.

Quite often their etiologic factors may be interchangeable. The very same protein sensitivities may be responsible for the dermatologic as well as the respiratory symptoms. However, it is best to consider them separately.

A. Infantile Dermatitis or Eczema

Modern infant feeding replacing breast feeding from birth, or when used as a supplementary feeding to breast, is not a problem in normal children. Every pediatrician or general practitioner is very well trained in the preparation of various formulas for infant feeding. Feeding becomes a problem when handling infants of allergic parents, especially when they show a tendency to pruritis, or to early erythematous skin irritations. Caution must be exercised to prevent dermatitis or infantile eczema with all its horrors.

Single Food Trial Diets:

Every article of food should be on a trial basis. The following precautions should be considered:

To illustrate, if one wished to start an infant on tomato juice:

(a) Begin with small repeated quantities.

(1) *First Day*—a few drops of tomato juice should be given every three waking hours.

(2) *Second Day*—Half of one teaspoon of tomato juice should be given every three waking hours.

(3) *Third Day*—From one to four teaspoons should be given every three waking hours.

(4) *Fourth day*—Infant should be examined daily for the three day trial period and if no skin irritation or any other evidence of sensitivity is present, the full portion

of the amount of tomato juice may be given from then on. All other articles of food, i.e., eggs, oranges, vitamins, drugs, etc., should be tried in a similar way. In most instances any state of sensitivity in the infant will be shown on the second or third day and that food should be discontinued. Repeat same trial diet for another single food after period of six days.

(b) Prescribe only one new food at any one time. As the infant *grows older and full diet is allowed, use the same caution* up to the age of one or two years. We have found parents willing to cooperate, if it is explained that these trial food tests are the next best step to actual skin testing. These single food trial diets are sometimes very reliable and serve to avoid trouble.

B. Acute or Chronic Respiratory Infections

1. Contributing factors. Do not allow infants outdoors on windy days. The wind and dust may start nasal obstruction and sneezing spells. Prolonged stay outdoors on cold days (unless it be for very short intervals) may chill the mucous membrane of the respiratory system. It may cause attacks of croup, laryngitis, and bronchitis. Do not place infants near open windows for the same reason. Do not allow infants or children to crawl or play on unprotected floors. They are the coldest and most unsanitary place in the house.

2. Use caution when immunizing children against acute infections or contagious diseases to avoid angioneurotic edema or any allergic shocks.

3. Proper treatment and convalescence of acute respiratory infections.

2. *To Prevent Allergic Syndromes in Adults*

A. Measures to Prevent Allergic Diseases in Adults

In early adolescence, if the person shows any allergic tendency, it is best to:

1. Have a complete allergic study made.
2. Abstain from all positive and doubtful allergenic factors

to which he gives a positive reaction. To illustrate: If he is positive to various pollen, it is best to avoid cross-country drives, hikes through fields and hunting during respective pollen season. If he is sensitive to foods—avoid such foods—or use them in very small portions.

3. In case of organic nasal obstruction, stay away from swimming pools as the chemicals in the water may produce nasal *irritation* or perennial *rhinitis. Have a competent laryngologist make a nose and throat examination in conjunction* with an allergist to advise the patient of the necessity of any surgical interference and when it should be done.

4. Juvenile nasal polyps (uni-lateral or bi-lateral) are a rather dangerous sign. In our experience, if this condition is not corrected, it may turn into uncontrollable attacks of chronic bronchial asthma.

5. Avoid strenuous exercise or games. They may be responsible for attacks of bronchial asthma and other allergic syndromes.

6. Avoid excessive perspiration. It may induce attacks of pruritis and *dermatitis.*

7. *Patients with pruritis and dermatitis should avoid all condiments* and *highly seasoned foods as they induce thirst and excessive* drinking of water. The resultant excessive *perspiration may burn* the skin and aggravate the existing pruritis and dermatitis.

8. Perspiration of the feet, when in contact with shoe dyes and their materials, may also produce dermatitis and other skin conditions of the feet. It is best to protect the feet by using plastic footlets, made of *material similar to that used in bathing caps.*

9. Abstain from wearing colored garments, especially shades of blue and black, touching the body. We found them to be responsible *for* local and general pruritis and dermatitis, especially when in contact with excessive perspiration.

B. To Prevent Recurring Attacks

The allergic individual must realize he has a disease which has a tendency to recur.

1. Many cases respond to treatment immediately with a complete disappearance of the clinical symptoms. However, some require

prolonged care because causes responsible for relapses must be removed and avoided. New etiologic positive factors may appear which also have to be located, treated or avoided.

2. The allergic patient, similar to the diabetic, must be constantly on guard, and completely rehabilitated and regulated.

    (a) Select the proper occupation.
    (b) Limit daily work to four or six hours daily with rest periods in between.
    (c) He must avoid exertion or undue excitement.
    (d) Use allergen free coverings for mattress and pillows.
    (e) Sleep in a dust proof room and if pollen sensitive in a pollen free room.
    (f) No perfumes, tooth or body powders, insecticide sprays to be used anywhere in the house.

He should be continually under the physician's care so as to evaluate every factor which may be responsible for the recurrence of his allergic syndromes.

II. SPECIFIC INDICATIONS

Specific treatment implies the principles and methods of desensitization. Every patient, however, after having had a complete allergic study, should either avoid or remove every possible positive or suspicious factor that may directly, or indirectly, play a part in the active clinical symptoms. If allergic factors cannot be removed, or if it is impossible for the patient to stay away from the active positive factors, the next important step is to make plans for a course of desensitization.

The most important principle in our method of desensitization is to start with very small doses of the antigenic extracts and maintain very small doses for months—and increase very gradually. If the patient does not improve, or if the patient had a period of improvement and the symptoms recurred, always reduce the dose. We often forget that over-dosing may produce a continuation of the very same clinical symptoms from which the patient is seeking relief. In some instances mild constitutional reactions may occur which are never recognized as such. We have lost many patients in our private prac-

tice, as well as in our clinics, on account of having had a continuation of hay fever and asthmatic symptoms, before we realized it was due to overdosing. If the patient feels better, do not discontinue treatment immediately.

The value of *very weak dilutions* in specific desensitization manifested itself in the course of treating patients when they came in the height of the pollen season. We noticed that *if patients gave a positive reaction from 1:25,000 dilutions of the respective seasonal pollen, they were doing well if treated with daily injections of 1:50,000 dilutions of the similar pollen. In 1930 we divided all new patients who responded favorably to pollen desensitization, into three groups of five each:*

Group A. Daily injections of the next weakest dilution to the one to which they gave a positive reaction.

Group B. Daily injections of sterile physiologic salt solution.

Group C. Treated three days with weak pollen dilutions. Next three days with sterile physiologic salt solution.

The patients were not aware of the kind of injections received but they kept a daily record of their symptoms, whether free or not from hay fever. Ninety per cent of the patients came for injections five times a week and their results were recorded. The tabulation, after the season, *showed invariably perfect results followed in patients who received the daily injections of the weak pollen dilution. Hay fever* symptoms did not improve *in those patients who received the salt* solution injections.

The patients in Group C. *improved on the days when they received their pollen injections.* They made no *improvement, however,* during the days when they received their *salt solution injections only.*

In approximately 60 per cent of the patients, who were *treated* with mild pollen dilutions, the results were perfect *after the first week.* Many of them, because of the good results, depended upon *seasonal* treatment which usually lasts from two to three weeks. *There is this* disadvantage, however, one cannot tell which patient *will obtain good* results from the seasonal treatment. *Poor* results are *dangerous on* account of the possibility of the occurrence of pollen *asthma. There-*

fore, patients were advised to begin treatment four to six months before the season, or continue treatment throughout the year.

In pollen sensitivities the patient should be under care for two or three years. In perennial conditions, especially chronic asthmatic, patients should be under care from three to five years or longer before they can consider themselves discharged. The principles of pollen, dust, and bacterial desensitization have been considered in their respective chapters. It is necessary, however, to add how to take care of patients who have shown a sensitivity to epidermals or inhalants, which is as follows:

Desensitization for Epidermals or Inhalants

Patients, who are allergic to various epidermals or inhalant allergens are of several varieties.

(a) Sensitive to single inhalant, i.e., to cat or to dog hair.

(b) Sensitive to several inhalants, such as cat,- rabbit-hair, or feathers, or any other combination of epidermals or inhalants in general.

(c) Those who have single or multiple inhalant sensitivities and at the same time complicated by other sensitivities, such as pollen, dust, molds, and bacteria.

Desensitization treatment is highly specific; one allergen does not interchange or replace another allergen. That is, if a person is sensitive to cat hair, treatment with feathers or dog hair extract or with any other allergen will not desensitize that patient for cat sensitivity.

Patients will improve from inhalant and epidermal sensitivity by merely staying away, or by removal of the offending inhalants from the patient's environment or contact, such as.

(a) Removing feather pillows.

(b) Taking away cats and dogs from the home.

(c) Removing mohair furniture, rabbit hair rugs, and rabbit hair dresses.

With other patients, avoiding contact with epidermals alone does not cure them, unless it is supplemented with desensitization for all of the inhalant allergens. In these patients, treatment should

be started with *mild dilutions* including all the inhalants to which the patient gave a positive reaction, as mentioned in the chapter on Pollen Treatment.* Great caution must be exercised. Always begin with weak dilutions, 1:10,000 or weaker dilutions, then gradually but persistently increase to stronger concentrations.

The following case will illustrate:

CASE NO. 51

M. G.: Male, fifty-five years old. Referred by family physician. Asthma began at age of thirty-eight years. Practically incapacitated for last three years. On testing, he was found positive to goose feathers, cat hair, and goat hair. (Had mohair covered furniture, usually made of goat hair). He was instructed to clean his house and get rid of goose feather pillows, mohair covered furniture, and to remove the cat from his environment.

After five months, he was still sick and unable to work. We decided to start animal inhalant desensitization treatment. Injections began approximately with 1:20,000 dilutions including all the epidermals which gave a positive reaction. The extracts were placed in one vial as follows:

5 per cent cat hair extract	1 mm.
5 per cent goat hair extract	1 mm.
5 per cent goose feather extract	1 mm.
Sterile physiologic salt solution	20 cc.

One minim, given daily or every other day—increased by 1 mm. to 10 mm. repeated several times from 1 mm. to 10 mm. until there was hardly any local reaction to the intracutaneous injections. Then it was increased from 10 mm. to 15 mm., also repeated several times. The dilution was then increased to a stronger concentration. Two mm. from each of the above mentioned 5 per cent concentrated extracts was added to a 20 cc. vial of salt solution. Treatment was continued as directed above. In four months, he was well enough to return to work.

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*p. 98.

III. PSYCHOGENIC TREATMENT

No treatment will be complete without a discussion and evaluation of the psychogenic factors in each patient. The physician must be constantly on the alert to prescribe and treat the patient as a whole, to analyze the patient's marital and financial status, and to investigate working and home surroundings. Just as physical exhaustion will aggravate or precipitate many an illness, so will severe mental tension. In these cases, no matter how exhaustive the allergic study, success will not be obtained unless the factors causing tension can be alleviated.

We occasionally meet patients who subjectively continue complaints so they can be showered with sympathy and attention. This type of patient will never co-operate, will not carry out the prescribed instructions to improve their condition and will pretend that the medicine and prescribing offered is of no avail.

Many children of high school age have hostile and morbid attitudes toward their parents. Therefore they may put all kinds of foreign bodies, such as papers, cloth, cotton, in their noses so as to produce paroxysmal attacks of sneezing for hours; or clandestinely swallow ice and ice cream and come in the house with attacks of wheezing and coughing, to get attention from their mothers.

These various paroxysmal attacks are purposely brought on by the children themselves as an escape complex to avoid school attendance or as a hostile tantalizing attitude toward the parents.

Adults, male or female, create various episodes of illness and utilize them as an escape mechanism.

Husbands who have lost their business in financial transactions, or, in time of depressions, lost all they had, may "produce" attacks of asthma or other allergic manifestations to get sympathy or financial help from creditors or various members of their family. As soon as the financial condition is adjusted, it does not take long for them to improve from their complaints.

Wives who are having some difficulties in their association with husbands or children create and try to maintain their illnesses which would function as an escape. After weeks of hospitalization, when

they are ready to be discharged, they create attacks so as to stay in the hospital.

Unless the doctor will recognize this type of patient, he will be wondering what happened to all the drugs that so many research specialists in medicine have recommended. In many of these cases patients must be disassociated from their environments, children have to be temporarily separated from parents, and the like, to accomplish results.

The doctor must play fair, must expose his suspicions to some member of the family, informing them of the lack of cooperation. After exposing the patient he may get real cooperation and will find that it may not be so hard to rehabilitate, regulate and improve this type of patient.

IV. NON-SPECIFIC TREATMENT

The action of various drugs is quite often considered in the lecture room from an adrenergic and cholinergic therapeutic effect. To the general practicing physician, it is only of academic interest. What he is mostly concerned with is the clinical and symptomatic relief obtained when called upon to treat patients. An allergic may have any kind of drug or therapeutic measure, when indicated, for his comfort and relief. *One must not forget* the possibilities of the patient being sensitive to any and every drug which may be prescribed for him. Always use the following precautions:

1. Do not use large doses.
2. Do not prescribe too many drugs at any one time.
3. Do not use proprietory preparations unless you know the detailed content of the drugs and their doses.
4. In chronic asthmatics ephedrin or epinephrin preparations are used for relief only while studies are made, causes determined and plans for treatment properly outlined. Do not depend on epinephrin injections or epinephrin sprays alone because they will never cure an allergic person. It is equivalent to sentencing a patient to invalidism or to a slow death.

5. Respect and seriously consider any suspicion of drug sensitivity. Be sure to inform the patient about drugs when he has actually proved sensitive to them.

1. *Emergency Treatments*

An acute sudden attack of bronchial asthma is often an alarming emergency.

(a) It usually occurs in a patient who is suffering from chronic winter bronchitis or chronic bronchial asthma. An acute attack may follow an upper respiratory infection; after a sudden exertion, i.e., after shoveling snow, or after running one or two city blocks; also, after some excitement.

(b) It may occur as a constitutional reaction following an overdose of any allergen in the course of desensitization, after an injection of tetanus or diphtheria antitoxins or similar therapeutic agents. The attacks may occur either immediately after the injections (known as an allergic or anaphylactic shock) or it may be delayed a few days or even a week. If the reaction follows antitoxin (horse serum reaction), it may be complicated by urticaria and angioneurotic edema.

1. Most of these above mentioned emergencies are easily controlled by small repeated doses of epinephrin. In others, it is important to place a tourniquet on the arm above the injection, holding back the sudden absorption of the allergen.

(a) In emergency, when a patient is epinephrin-fast, there is a tendency to use larger doses of epinephrin in oil. Epinephrin in oil or in gelatin was introduced for its slow and prolonged action in a patient who *responds to epinephrin* so as to prevent the necessity of repeating, every one or two hours, the ordinary dose of 1:1,000 dilutions. In an *epinephrin-fast* patient, do not use intramuscular injections of epinephrin in oil or in gelatin. It is apt to shock the patient and to produce toxic effects upon the heart, without relieving the respiratory embarrassment. However, very small intradermal injections (1 mm. to 2 mm. of epinephrin often repeated) are much more effective.

(b) Pitresin (Pituitrin) equal parts with epinephrin (1:1,000) 2 mm. of each every three hours.

2. If there is no response to epinephrin, *no matter* how administered, use the following therapeutic treatment:

(a) Aminophyllin intravenously—3½ grs. in 10 cc. dilution.
Aminophyllin intravenously—7½ grs. in 20 cc. dilution.

It must be injected very slowly and may be repeated every four to six hours.

(b) Blood letting from 6 to 8 ounces by itself or followed by intravenous aminophyllin.

(c) Aminophyllin suppositories, 5 to 7 grs. in cocoa butter with or without 2 grs. phenobarbital every eight hours.

(d) Oral or subcutaneous injections of phenobarbital sodium, 2 grs. in 3 cc. physiologic salt solution every three or four hours or its equivalent in any barbiturate preparations. (38)

(e) Intravenous glucose—5 per cent to 10 per cent in physiologic salt solution, 200 to 300 cc. by drip method or a 50 cc. ampoul of a 25 per cent glucose, to be given slowly in each instance, once or twice daily (p. r. n.).

The glucose, as well as all of the above mentioned measures, have a tendency to make the patient come out of status asthmaticus and again respond to medication. At the same time the glucose helps to dry up the moist rales in the chest. Intravenous glucose, or any medication containing sugar in large quantity, should not be given to an asthmatic with a dry chest.

(f) Patients with dry, wheezy chests who suffer from acute bronchial asthmatic attacks have a great deal of difficulty in expectorating. Quite often expectorant drugs either disagree or do not produce the desired results. One may use inhalation from a large size croup kettle or any set-up used by the physician for attacks of acute laryngitis in infants or children. Steam, medicated with tincture benzoin compound or other antiseptic oily medication can be employed with advantage in dry, wheezy chests during acute attacks of bronchial asthma or in status asthmaticus.

3. If the patient does not respond to any of the above measures, use the following:

(a) Oxygen, helium and oxygen inhalations or oxygen tent.

(b) Rectal installations of ether in olive oil with the ordinary size rectal tube, equal parts, 2 ounces each of ether and olive oil. It may be repeated every four hours if there is no rectal irritation.

(c) A very small dose (if used very cautiously), from 1/6 to 1/8 of a grain of morphine or its equivalent of any opium derivative, such as codeine or dilaudid, is very effective. After a few hours of rest the patient's cellular and humoral mechanism may become balanced, the physiologic functions restored and the patient again responds to the previously mentioned medications.

Many of these patients suffer from muscular chest pains as well as general muscular pain throughout the body. It has been our experience that intramuscular or intravenous injections of vitamin B complex is very effective.

2. *Drug Treatment for Ambulatory Patients*

Patients not acutely ill usually come to the office or dispensary for study and treatment. As a rule, in dispensary or hospital clinics a code or a short name is used for certain prescriptions so as to save time in putting orders on charts.

The following prescriptions have been used in our clinics with benefit when indicated:

a. Code No. 1 Cold Capsule

Rx. Acetyl Salicylic Acid.. gr. 5
Phenacetin .... gr. 2
Caffein Citrate
Dover's Powder ....each gr. 1
Made into a capsule for one dose. The patient may take a capsule after each meal with a 5 or 10 gr. soda mint tablet. One must make certain the patient is not sensitive to aspirin or ipecac.

b. Code No. 2 Asthma Capsule No. 1

Rx. Ephedrin Sulphate
Phenobarbital Sodium
Codein Sulphate ....each gr. 1/6 to 1/4
Aminophyllin .... gr. 2 or 3

Made into a capsule for one dose. Capsule can be given *four times* a day until the patient is free from the asthmatic attacks. It may be given two hours after the cold capsule. After the patient is free from dyspnea and wheezing, give only when patient has an asthmatic attack. Do not prescribe any ephedrin preparation or its equivalent to a patient who is sensitive to ephedrin or to a patient who has any suspected hyperthyroid or parathyroid disturbances. If it must be given, the patient should receive intramuscular injections of 10 cc. calcium gluconate daily or every other day for a week or two. Calcium lactate orally may be substituted in 10 gr. doses three times a day for one or two weeks. Very small doses of ephedrin sulfate, 1/8 gr. or epinephrin (1.1000), ½ mm., can be given when necessary.

One must make certain that there is no dermatitis (exfoliative) from phenobarbital nor a sensitivity present to codein. The latter may occasionally induce coughing and asthma.

c. Code No. 3 Asthma Capsule No. 2.

Rx. The formula is the same as for Asthma Capsule No. 1 with the addition of atropin sulphate, gr. 1:600 to 1:400. This capsule containing the atropin sulphate is preferred in pollen asthmatics, who usually have a great deal of nasal discharge.

d. Code No. 4 Enteric Coated Asthma Capsule

Rx. The formula is the same as the Asthma Capsule No. 1 but in addition is enteric coated. It is given to patients before retiring at night so as to avoid the occurrence of any nocturnal attacks.

e. Code No. 5—Cough Mixture (To facilitate expectoration)

Rx. Codein Sulphate .... gr. 3
Phenobarbital Sodium .... gr. 3
Tr. Lobelia
Syrup of Ipecacuanha ....each drams 4
Lig. Potassium Citrate, enough to make 4 ozs.
One teaspoon in water four times a day.

At times patients are unable to take medication because they are suffering from gastric discomfort and unable to tolerate any drugs. Under these conditions it is advisable to use the following prescription:

f. Code No. 6—Stomach Sedative

Rx. Benzocain
Bismuth Subnitrate
Cereum Oxilate ....each gr. 1
Cocain HCL .... gr. 1/12
Calcium Lactate .... grs. 5
Made into a powder for one dose. This powder to be taken in water or in any soft drink, one half hour before any indicated medication. One must make sure that there is no sensitivity to cocain.

g. Code No. 7—Nerve Sedative

Rx. Chloral Hydrate .... grs. 5-10
Sodium Bromide .... grs. 10-20
Peppermint water .... ½ oz. or any vehicle
This dose to be given three or four times a day.

Many more drugs, too numerous to mention, may be used when indicated at the discretion of the doctor. The following are just a few of them:

1. Iodides in various forms, ammonium chloride and other expectorants.
2. Digitalis.
3. Hyocyamus.
4. Calcium preparations. Intravenously, subcutaneously or orally.
5. Ephedrin or its various synthetic equivalents.
6. Phenobarbital, nembutal or amytal, or their equivalents.
7. Arsenic dilutions in the form of liquor potassium arsenitis (Fowler's solution) or in the form of liquor arseni et hydrorgyrum iodidum (Donovan's solution).
   Arsenic preparations have a tendency to rejuvenate mucous membranes.
8. Various iron preparations, especially syrup ferric iodides.

All drugs must be started with very small doses and increased to the tolerance of the patient or to the physiologic results desired by the physician.

Do not use the intravenous route if the drug can be given intramuscularly or orally.

Autohemotherapy, hemotherapy and immunohemotherapy can be used freely at any time. The latter two (hemotherapy and immunohemotherapy) must not be used in female patients, especially those Rh negatives. There is great danger of sensitizing them.

3. *Respiratory Exercises*

Patients who are subject to recurring attacks of bronchial asthma are usually very poor breathers. Most of them do not know how to distend their chests and fill them up with fresh air. Their inspiratory and expiratory mechanism is out of proportion due to the accumulation in the bronchial system of the faulty stagnated air which has not been ventilated as a result of improper respirations. They are usually greatly alarmed by their choking sensations and their apparent inability to breathe. It has been our experience that a respiratory control is accomplished by respiratory exercises, blowing in a baby toy balloon or in a bottle or in a paper bag. Controlled and regulated respiratory exercises by blowing in a toy balloon for five minutes several times a day is most effective. It gives the patient confidence and stabilizes his respiratory mechanism. It has been of great value in those patients who have suffered for years from recurring attacks of bronchial asthma.

4. *Local Nose and Throat Medication*

In hospital and dispensary clinics, it is usually the custom to refer these patients to various departments for diagnosis and treatment. However, with private patients unless there is surgical indication to refer to a nose and throat specialist, one is justified in giving them nose and throat treatment. Practically all patients with chronic asthma, bronchitis and perennial rhinitis have infected noses and throats. Their recovery depends a great deal upon mild local treatment which must be continued for months. Great caution must be used in the selection of

drugs for local treatment.(39) (40) The patient himself should know and approve the drugs which agree with him. One may use the following drugs locally:

1. Silver nucleate in dilutions from 5 per cent to 25 per cent for both the nose and throat if it does not produce any local irritation.

2. Solution of mercurochrome—5 per cent to swab the throat only.

3. Lugol solution in glycerine in various dilutions in chronic or dry naso-pharyngitis.

4. Various bland oils, with or without camphor and menthol, may be used in the nose and throat.

5. Sulfathiazole may be used by gently blowing into the nose and throat.

6. Local use of penicillin. The local use of penicillin in upper respiratory infection of bacterial origin is of value. We have accumulated detailed study of twenty-six patients with frequent recurring colds of the nose and throat. No matter what allergic factors were responsible for their conditions, if it was complicated by bacterial infection, in addition to other local and constitutional treatments, the spraying of penicillin in the nose and throat was undoubtedly very effective in most patients. We are preparing a solution of penicillin to be used as a spray in the following manner: 100,000 units of penicillin are dissolved in 40 cc. sterile physiologic salt solution (containing 0.4 carbolic acid), with or without addition of 5 cc. of glycerine. The patients are instructed to keep the bottle cool in the refrigerator but not to spray when it is cold as it is apt to give some pain or discomfort. One or two drams at a time is put in a good atomizer, each nostril in rotation is sprayed until enough of the liquid is felt in the post pharyngeal space to be swallowed. After a minute or two of rest, the throat is sprayed until enough of liquid is felt to be swallowed. The spraying is to be kept up, alternating each side of the nose and throat, from five to ten minutes. This should be repeated every three hours when the patient is at home. As a rule it can be done early in the morning and three or four times after working hours if a working person, as well as every three hours on week ends when not at work.

Sixteen patients with perennial rhinitis and ten patients with bron-

chial asthma were closely observed. On inspection all showed red, inflamed pharynx studded with red follicles, on cultures and smears had a great deal of staphylococcus and micrococcus catarrhalis, some had bacillus coli and some Friedlander bacillus. After having used penicillin spray for one week's time, they made remarkable clinical improvement. In 30 per cent of them the throat cultures became negative to the above.

In four other patients the spraying of penicillin brought on many uncomfortable experiences. One patient, on spraying, complained it smelled "like burning rubber." The mucous membrane of the nose and throat swelled up immediately after spraying and three of the four patients were very uncomfortable due to its bringing on an attack of rhinitis. The addition of glycerine and diluting of the penicillin solution did not make any difference, the discomfort was the same. Two of these four patients could not take the penicillin parenterally. One patient collapsed after the first injection of 25,000 units of penicillin in 3 cc. of physiologic salt solution and necessitated several injections of adrenalin. Three of the four developed dermatitis and itching after the fourth injection of penicillin which had to be discontinued. Some patients cannot tolerate the physiologic salt solution containing ½ per cent carbolic acid and it is best to dissolve the penicillin in sterile distilled water.

Comment: There are many other medications that may be used provided they do not produce local irritation. Once a medication is found irritating, it must be printed in large type on patient's office card and thereafter avoided.

5. *Local Skin Applications*

Do not use tincture of iodine locally on cuts or bruises in allergic individuals, for it may produce dermatitis. Similarly, all local application of ointments for pruritis and dermatitis must be guided by patient's response. Small areas must be tried first with any ointment. If it is favorably tolerated and therapeutically successful, use it. If irritating, discard it.

CHAPTER SIXTEEN

LABORATORY SETUP

I. *Necessary Laboratory Material and How to Operate a Mandler Filter.*

II. *Proper Laboratory Technique and Methods of Sterilization.*

III. *Preparation of Pollen Extract.*

IV. *Preparation of Various Dilutions Used in Intradermal Testing of Inhalants, Foods and Molds.*

V. *Preparation of House Dust Extract.*

VI. *Pooled Autogenous Vaccines.*

VII. *Pooled House Dust Extracts.*

I. *NECESSARY LABORATORY MATERIAL AND HOW TO OPERATE A MANDLER FILTER*

It is not necessary for one who is interested in office allergy to prepare the concentrate testing materials. However, if time and facilities permit, it is best to have an inexpensive and properly arranged laboratory. It may be of great advantage to the doctor as well as to the patients, to prepare various pollen and house dust extracts, and the like.

Many botanical houses specialize in the distribution and selling of pure dry pollen. It may be obtained in 1 gram vials or in any quantity desired. The accompanying charts* are to familiarize the reader with the parts of the Mandler filter apparatus, and with how to assemble them. It is worked by water suction. It is very easy to

*pp. 175-176.

assemble and operate. It is important that the filter flask and Mandler filter with its adjustable cork be handled as follows:

1. Separate and wash thoroughly, after every filtration.
2. Reassemble the parts and filter through one to two quarts or more of plain water. This is done in order to dissolve and remove any antigenic extracts which may have remained in the filter.
3. Boil the filter flask separately (5430).
4. Boil the Mandler filter unit (5106) which is properly fitted in the glass mantle (5105) with the rubber stopper on the nipple of the filter (see drawing).
   Boil the flask and assembled unit as described above separately for five to ten minutes. They may be boiled shortly before using, and boiled and wrapped in a sterile towel, for future use.

The rest of the apparatus can always remain attached to the faucet on the laboratory table.

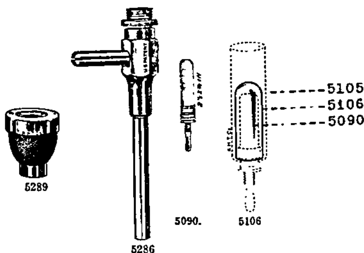
The following materials are necessary for this type of laboratory work:

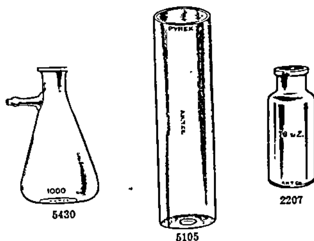
1. Sterile distilled water.
2. Physiologic salt solution tablets to make physiologic salt solution.
3. A few ounces of carbolic acid. All physiologic salt solutions used in the laboratory should contain ½ per cent carbolic acid.
4. Glycerine.
5. Graduate glass—100 cc.

II. PROPER LABORATORY TECHNIQUE AND METHODS OF STERILIZATION

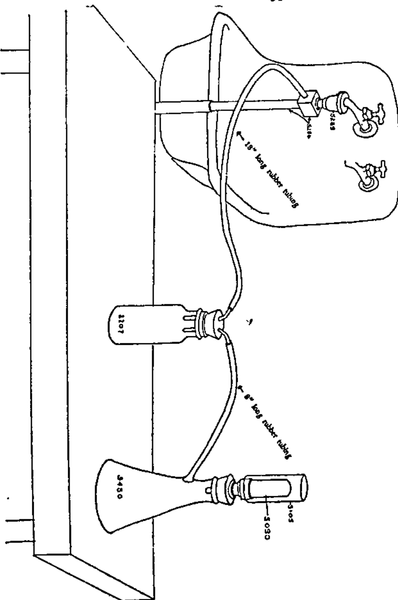
The physician must familiarize himself with general laboratory technique and sterilization. Everything, including bottles used in the work, must be boiled if used to bottle solutions *for hypodermic injections. We have always made it a habit to boil the crude physiologic salt*

The Mandler Filtration Set-up.*





*Descriptions see p. 177.



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Description of the Mandler filter:

5289 Filter pump coupling 1/4″.
5286 Filter pump 4-3/4″ with 1/4″ pipe thread.
5090 Mandler filter (regular) 2-1/2″ x 5/8″.
5105 Glass mantles, 4-3/8″ x 1-1/4″ (for above filter).
5106 Glass cover—75 x 33 mm. (for above filter).
5430 Filter flask, 1000ml.
Or 5431 Filter flask, 1000ml pyrex glass.
8810 Rubber stopper No. 8, solid, but bored with a hole to take nipple of filter.
8843 Rubber tubing, 1/4″ bore.
2207 Bottle, 8 oz., wide mouth, to be used as a water trap.
8811 Stopper, No. 6, two hole, for above bottle.

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solution for two to five minutes—then let it cool. Pass it through a sterile Mandler filter and fill several six or eight ounce sterile bottles, capped with sterile rubber corks. From the bottled sterile salt solution one may fill up 5 cc., 10 cc. and 20 cc. bottles in order to have on hand the proper amount for various dilutions for dust and pollen extract (according to formulas described in the respective chapters on pollen and dust extract preparations).*

The Mandler filter should be used to filter sterile solutions that a doctor uses in treating his patients, as illustrated on pp. 175/6.

One may utilize all the discarded bottles and their rubber corks from various commercial products used in the doctor's office such as insulin bottles, penicillin bottles, bottles from intramuscular preparations of vitamins, liver extract and the like.

It is easy to wash, clean, boil and sterilize these bottles and make them ready for use.

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*See pp. 178-181.

III. PREPARATION OF POLLEN EXTRACTS

The practising physician must be familiar with the kind of pollen prevalent in his community or locality, in order that he may use the proper pollen extracts for his patients who suffer from seasonal pollination.

Botanical and pharmaceutical houses which supply the physician with pure, dry pollen usually have maps for the types of pollen present in various sections of the United States. If one is interested or has the time, he may familiarize himself with the method of identifying pollen under the microscope. He may also make a pollen survey of his locality as well as daily pollen counts in the seasons.

A survey for the specific type of pollen and seasonal daily pollen counts are made on glass slides as follows:

Six or ten glass slides are covered with glycerin or white vaseline. They are placed on window sills either in the patient's home or office buildings in various parts of the city, from four to twelve hours during the day. After these slides are collected, place one or two drops of Lugol's Solution and a cover glass over each slide and examine them under a microscope. All pollen granules will be stained blue. With a little experience, one may soon learn how to identify the various pollen. One may send the slides to a neighboring botanist, or to a pharmaceutical house for identification. Count all identified pollen on each slide exposed for that day and determine an average count.

From 1918 to 1925 all associates in our clinics were enthusiastic about making a daily pollen count with the assumption that we could foretell the severity of the season from the daily pollen count. After many years of checking the pollen counts with the state of severity found in the patients, we were disappointed for the following reasons:

1. In apparently mild seasons with a small pollen count, many of the patients experienced their worst season.

2. A number of new patients, who called for treatment, had very severe symptoms in seasons with mild pollen counts, because they happened to have a great deal of pollen contact, such as cutting grass or weeds, hunting and tramping in the fields and on cross-country

automobile drives. We concluded, therefore, it is not so much the amount of pollen in the atmosphere, but the amount of pollen with which the patient comes in direct contact. Therefore, we gave up the pollen count in our clinics. We are using it only for class demonstration or other academic purposes. The daily newspapers, however, publish the pollen count daily during the fall hay fever season.

It makes no difference in what particular part of the country one practices, the preparation of the pollen extract is the same. Always have uniformity in the pollen preparations, i.e., a 3 per cent pollen extract. In our opinion the combined pure, dry pollen should not exceed 3 grams per 100 cc. dilution, whether the 3 per cent is made from one kind, or combined from several kinds of pollen.

A 3 per cent concentrated pollen extract is prepared as follows:

Three grams of pure, dry pollen is suspended in 100 cc. dilution; equal parts of glycerine and physiologic salt solution, containing ½ per cent of carbolic acid. It is shaken off and on—for three to four days—then paper filtered, Mandler filtered and tested for sterility. The kind of pollen to prepare depends on the different seasons of the year and various locations in the country.

Of the many pollen extracts prepared in our clinics, the following may serve as illustrations:

1. *The Sycamore Tree Group of* 3 *per cent Pollen Extract.*

Sycamore—pure dry pollen	1 gram
Maple—pure dry pollen	1 gram
Elm—pure dry pollen	1 gram
Total	3 grams

Physiologic salt solution (containing ½ per cent of carbolic acid) and glycerine, equal parts to make 100 cc.

2. *Oak Tree Group of* 3 *per cent Pollen Extract.*

Oak—pure dry pollen	2 grams
Beech—pure dry pollen	½ gram
White Ash—pure dry pollen	½ gram
Total	3 grams

Physiologic salt solution (containing ½ per cent of carbolic acid) and glycerine, equal parts to make 100 cc.

3. *Grass Pollen Extract.*

Timothy Grass—pure dry pollen	1 gram
Orchard Grass—pure dry pollen	1 gram
June Grass—pure dry pollen	½ gram
Rye Grass—pure dry pollen	½ gram
Total	3 grams

Physiologic salt solution (containing ½ per cent of carbolic acid) and glycerine, equal parts to make 100 cc.

4. *English Plantain Pollen Extract.*

English Plantain—pure dry pollen .... 3 grams

Physiologic salt solution (containing ½ per cent of carbolic acid) and glycerine, equal parts to make 100 cc.

5. *Ragweed Mixture Extract.*

Ragweed short—pure dry pollen	2 grams
Ragweed giant—pure dry pollen	1 gram
Total	3 grams

Physiologic salt solution (containing ½ per cent of carbolic acid) and glycerine, equal parts to make 100 cc.

When several kinds of pollen are responsible for the symptoms of hay fever and asthma in any one pollen season, they are to be prepared in separate extracts, if they belong to a different botanical group or to a different pollination date. For that reason English plantain grass is made in a separate extract from the other grass pollen. On the other hand, timothy, orchard, June, rye grasses being the same botanical group and with similar pollination date can be made together in one extract. The proportion of pollen and kind of pollen that are to be included in the extract depends upon the largest reactions obtained when testing patients for the respective pollens.

In 1921, forty-six fall hay fever patients were tested with 1:25,000 dilutions of 3 per cent extract made from ragweed short and separately

from ragweed giant. All the patients gave positive reactions to both. However, we noticed that thirty-two gave the largest reaction to the ragweed short extract and very small reaction to the ragweed giant. Fourteen gave very large reactions to ragweed giant and very small reactions to ragweed short. Hence it was decided to mix ragweed short and ragweed giant in one extract in proportions of two to one, respectively.*

We had a similar experience at the same time with patients who were subject to hay fever, with or without asthma, in May and June (rose fever). A group of thirty-two patients were tested with a 1:25,000 dilutions of 3 per cent extracts of the following pollens: timothy, orchard, June, rye, sweet vernal, red top grasses.

Sixteen patients gave largest reaction to timothy.

Eleven patients gave largest reaction to orchard grass.

Three patients gave largest reaction to June grass.

Two patients gave largest reaction to rye grass.

The other grasses gave very small reactions.

The approximate proportion for the combined grasses to be used in one extract was established.** Similar findings from results for testing of tree pollen has established the combined proportion, for two sets of tree pollen extracts to be used.*** However, to decide the proportion of pollen and their combinations, a doctor is free to meet the needs of patients in any part of the country in which he practices.

IV. PREPARATION OF VARIOUS DILUTIONS USED IN INTRADERMAL TESTING OF INHALANTS, FOODS AND MOLDS

Many allergists have reported anaphalactic shock following protein skin testing, with an occasional fatal outcome.(41) (42) (43). The physician must familiarize himself with the material employed in testing so as to prevent the occurrence of constitutional reactions. It is the physician's responsibility for the safety of his patients to obtain ready-made dilutions or properly prepare dilutions from concentrates

*See 5, p. 180.
**See 3, p. 180.
***See 1 and 2, p. 179.

supplied by a reputable laboratory or pharmaceutical house. He should not experiment with testing material. He should leave that to the research man who has the better facilities. It is best to select one laboratory or pharmaceutical house, get to know its products, the concentration of its extracts, so as to prepare the proper dilutions for intradermal testing purposes. Dilutions are not stable and lose their potency in several weeks. It is advisable for the physician to replace the dilutions every few weeks. It is best, therefore, to have concentrate protein extract of known strength, for instance, of 1:10, supplied by a certain laboratory so it will be easy for the physician to make dilutions as necessary.

One may be at liberty to use the protein nitrogen determinations of approximate strength of the dilutions we are using for testing purposes.

Generally speaking, the testing material is prepared on the following principles of dilution.

½ mm. (1:10 concentrate extract) to 2 cc. of salt solution will give approximately 1:500 dilution.

1 mm. (1:10 concentrate extract) to 2 cc. of salt solution will give approximately 1:300 dilution.

2 mm. (1:10 concentrate extract) to 2 cc. of salt solution will make approximately 1:150 dilution.

4 mm. (1:10 concentrate extract) to 2 cc. of salt solution will make approximately 1:80 dilution.

CHART

A. *Dilutions to Test for Inhalants and Epidermals*

½ mm.	of Horse Dander	(1:10 concentrate)	to 2 cc. of salt solution
½ mm.	" Cottonseed	"	" 2 cc. " " "
½ mm.	" Flaxseed	"	" 2 cc. " " "
½ mm.	" Glue	"	" 2 cc. " " "
½ mm.	" Pyrethrum	"	" 2 cc. " " "
1 mm.	" Camel Hair	"	" 2 cc. " " "
1 mm.	" Cat Hair	"	" 2 cc. " " "

1 mm.	of Cow Hair	(1:10 concentrate)	to 2 cc. of salt solution
1 mm.	" Dog Hair	"	" 2 cc. " " "
1 mm.	" Goat Hair	"	" 2 cc. " " "
1 mm.	" Rabbit Hair	"	" 2 cc. " " "
1 mm.	" Sheep Wool	"	" 2 cc. " " "
1 mm.	" Orris Root	"	" 2 cc. " " "
2 mm.	" Chicken Feathers	"	" 2 cc. " " "
2 mm.	" Duck "	"	" 2 cc. " " "
2 mm.	" Goose "	"	" 2 cc. " " "
2 mm.	" Turkey "	"	" 2 cc. " " "
2 mm.	" Hair Mattress	"	" 2 cc. " " "
2 mm.	" Cotton	"	" 2 cc. " " "
2 mm.	" Kapok	"	" 2 cc. " " "
2 mm.	" Rayon	"	" 2 cc. " " "
2 mm.	" Silk	"	" 2 cc. " " "
2 mm.	" Henna (Rinse)	"	" 2 cc. " " "
2 mm.	" India Gum	"	" 2 cc. " " "
2 mm.	" Tobacco	"	" 2 cc. " " "

B. Foods

Four minims of a concentrate food extract (1:10) to 2 cc. of sterile salt solution is the usual way of preparing dilutions to test for foods. There are several exceptions: milk, eggs, cocoa or foods to which a great many patients are apt to give constitutional reactions. In these instances, use 2 or 3 mm. of the concentrate food extract (1:10) to 2 cc. of sterile salt solution. Routinely, use ½ mm. to 1 mm. of these in intradermal testing.

When patients give a history of being sensitive to certain foods and in case of testing for inhalants which are apt to give a constitutional reaction, such as cottonseed, flaxseed, glue, horse dander, use ¼ to ½ mm. or still weaker dilutions than ordinarily employed. When using small doses of mild dilutions, if no reactions occur, increase the amount the following day if another check is desired.

C. *Molds*

Use 1 or 2 mm. of the 1:10 concentrate extract to 2 cc. of sterile physiologic salt solution.

V. THE PREPARATION OF HOUSE DUST EXTRACT

Patients should be instructed to gather and obtain dust from the contents of each room in the house, by shaking out all clothing apparel, drapes, bed linens, blankets, to dust off with a hard brush all mohair covered furniture, and the like (this to be done with the windows closed but not by the patient). One hour later, after the dust has settled, it should be gathered in an electric or carpet sweeper, about 50 grams of it.

1. Put 50 grams of the dust in an 8 ounce jar and cover it with 100 cc. of physiologic salt solution, containing ½ per cent carbolic acid. Macerate this with a wooden stick for five minutes.

2. Twenty-four or forty-eight hours later, extract all liquid by squeezing small lumps or pieces of moistened dust or wringing it out through gauze.

3. Pass the liquid through plain filter paper.

4. Boil the filtered liquid down to about one ounce.

5. Cool and pass through a sterile Mandler filter.

6. Bottle the contents in approximately a one ounce sterile bottle and label it "CONCENTRATED HOUSE DUST EXTRACT".

The following dilutions are made for treatment:

House Dust Dilution—1:100

Concentrated house dust extract.................................... 2 mm.
Sterile physiologic salt solution.................................... 10 cc.

House Dust Dilution—1:10

Concentrated house dust extract.................................... 1 cc.
Sterile physiologic salt solution.................................... 9 cc.

House Dust Dilution—1:5

Concentrated house dust extract.................................... 1 cc.
Sterile physiologic salt solution.................................... 4 cc.

Patients are started with mildest dilution, producing a local skin reaction, gradually increased, as per instructions in various chapters on treatment.*

House dust extract prepared by our simple and inexpensive method compares favorably with dioxane and ammonia sulphate and other methods of preparation suggested by various allergists.(37)

In many sensitive patients we cannot go above 2 mm. or 3 mm. of 1:200 or 1:100 dilutions of our dust extract. In several instances mild constitutional reactions have occured which demonstrates the potency of the dust extract.

For illustration: A physician who suffered from perennial hay fever and asthma was found positive to grasses, ragweed pollens, and to house dust. He was perfectly free from symptoms after eighteen to twenty months treatment. He was worked up to 10 mm. of his own concentrated house dust extract. A fresh dust extract was made. The patient (physician) received 5 mm. of the new extract. In ten minutes he had a severe constitutional reaction. It was necessary to relieve him with 2 or 3 mm. of epinephrin every half hour for three doses before he was well enough to leave the office.

VI. POOLED AUTOGENOUS VACCINES

Pooled Autogenous Vaccines—Left over autogenous vaccines and house dust extracts, when made from the patient's own environment should not be discarded. They should be collected, separately, in 6 or 8 ounce bottles, passed through a sterile Mandler filter and bottled and corked under sterile precautions. The vaccine is then labeled "Sterile Bacterial Filtrate." It is a clear, transparent, light amber colored liquid. We use it in various dilutions, 1:10 or 1:5, and in concentrate form. It may be used in conjunction with any treatment for bacterial allergy.

VII. POOLED HOUSE DUST EXTRACT

Left over house dust extract is similarly collected in 6 or 8 ounce bottles. It is then passed through a sterile Mandler filter, bottled and

*See pp. 98-118.

corked under sterile precautions. It may be used in various dilutions—1:100, 1:10, and 1:5 and in concentrate form.

The following rules were observed in the collection and bottling of pooled left over autogenous vaccines and pooled left over house dust extracts:

1. The vaccines and the house dust extracts had to give positive local reactions on their respective patients.

2. We use only those extracts that successfully produced a complete recovery for patients who were under treatment for bronchial asthma or any other allergic symptom.

IN CONCLUSION

It has been constantly in the minds of the authors to present the various allergic problems in a concentrated form. We were always cognizant of the fact that a busy general practitioner, as well as the interested specialist, is anxious to obtain the desired information about diagnosis and treatment of difficult cases in a limited space of time. Therefore, an effort has been made to condense a wealth of material from many sources, as well as our own original methods, into a readable outline. It has served us as a book of reference in the treatment of difficult allergic patients and we trust it will guide our readers successfully and inspire some of them to solve our many as yet unanswered problems in the field of allergy.

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